ZIOPHARM ONCOLOGY INC
Form 10-Q
October 22, 2013
Table of Contents

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-Q

(Mark One)

þ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2013

OR

¨ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission File Number 001-33038

ZIOPHARM Oncology, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**84-1475642**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

One First Avenue, Parris Building 34, Navy Yard Plaza

Boston, Massachusetts 02129

(617) 259-1970

(Address, including zip code, and telephone number, including area code, of registrant s principal executive offices)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period than the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes: þ No: ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes: þ No: ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or smaller reporting company. See the definitions of large accelerated filer, accelerated filer, and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ¨	Accelerated filer þ
Non-accelerated filer ¨ (Do not check if a smaller reporting company)	Smaller reporting company ¨

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes: ¨ No: þ

The number of shares of the registrant s common stock, $.001 par value, outstanding as of October 14, 2013, was 83,696,029 shares.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements that are based on our current beliefs and expectations. These forward-looking statements may be accompanied by such words as anticipate, believe, estimate, expect, forecast, intend, may, plan, project, target, will and other words and terms of similar meaning. Reference is made in pa to forward-looking statements regarding:

- the anticipated amount, timing and accounting of deferred revenues, milestone and other payments under licensing, collaboration or acquisition agreements, research and development costs and other expenses;
- the protection afforded by our patent rights;
- our assessment of the potential impact on our future revenues of healthcare reform legislation in the United States;
- the timing and impact of measures worldwide designed to reduce healthcare costs;
- the impact of the deterioration of the credit and economic conditions in certain countries in Europe;
- our ability to finance our operations and business initiatives and obtain funding for such activities;
- the sufficiency of our cash, investments and cash flows from operations and our expected uses of cash;
- the costs and timing of the development and commercialization of our pipeline products and services;
- additional planned regulatory filings for and commercialization of our synthetic biology product candidates and Palifosfamide; and
- contract manufacturing activity.

These forward-looking statements involve risks and uncertainties, including those that are described in the *Risk Factors* section of this report and elsewhere within this report that could cause actual results to differ materially from those reflected in such statements. You should not place undue reliance on these statements. Forward-looking statements speak only as of the date of this report. We do not undertake any obligation to publicly update any forward-looking statements.

NOTE REGARDING COMPANY REFERENCES

Throughout this report, ZIOPHARM, the Company, we, us and our refer to ZIOPHARM Oncology, Inc.

NOTE REGARDING TRADEMARKS

Our registered trademarks include Zymafos and Zinapar. Our trademarks include Zybulin. All other trademarks, trade names and service marks appearing in this Quarterly Report on Form 10-Q are the property of their respective owners.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

Table of Contents

Table of Contents

Part I Financial Information

Item 1. Consolidated Financial Statements

ZIOPHARM Oncology, Inc. (a development stage company)

BALANCE SHEETS

(unaudited)

(in thousands, except share and per share data)

	September 30, 2013	December 31, 2012
ASSETS		
Current assets:		
Cash and cash equivalents	$ 23,631	$ 73,306
Receivables	449	58
Prepaid expenses and other current assets	3,195	6,912
Total current assets	27,275	80,276
Property and equipment, net	1,336	1,994
Deposits	128	133
Other non-current assets	739	1,001
Total assets	$ 29,478	$ 83,404
LIABILITIES AND STOCKHOLDERS EQUITY		
Current liabilities:		
Accounts payable	$ 891	$ 1,509
Accrued expenses	11,573	16,516
Deferred revenue current portion	800	800
Deferred rent current portion	98	39
Total current liabilities	13,362	18,864
Deferred revenue	2,133	2,733
Deferred rent	349	400
Warrant liabilities	9,983	12,962
Other long-term liabilities	20	
Total liabilities	25,847	34,959
Commitments and contingencies (note 7)		
Stockholders equity:		
Preferred stock, $0.001 par value; 30,000,000 shares authorized and no shares issued and outstanding		

Common stock, $0.001 par value; 250,000,000 shares authorized; 83,681,579 and 83,236,840 shares issued and outstanding at September 30, 2013 and December 31, 2012, respectively	84	83
Additional paid-in capital common stock	331,817	325,177
Additional paid-in capital warrants issued	3,657	6,909
Deficit accumulated during the development stage	(331,927)	(283,724)
Total stockholders equity	3,631	48,445
Total liabilities and stockholders equity	$ 29,478	$ 83,404

The accompanying notes are an integral part of the unaudited interim financial statements.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

STATEMENTS OF OPERATIONS

(unaudited)

(in thousands, except share and per share data)

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,		Period from September 9, 2003 (date of inception) through
	2013	2012	2013	2012	September 30, 2013
Research contract revenue	$ 200	$ 200	$ 600	$ 600	$ 2,067
Operating expenses:					
Research and development, including costs of research contracts	6,247	16,215	40,133	48,464	252,478
General and administrative	3,068	5,712	11,459	15,462	99,777
Total operating expenses	9,315	21,927	51,592	63,926	352,255
Loss from operations	(9,115)	(21,727)	(50,992)	(63,326)	(350,188)
Other income (expense), net	(191)	(42)	(190)	(65)	4,511
Change in fair value of warrants	(7,407)	3,945	2,979	(2,516)	13,750
Net loss	$ (16,713)	$ (17,824)	$ (48,203)	$ (65,907)	$ (331,927)
Net loss per share basic and diluted	$ (0.20)	$ (0.23)	$ (0.58)	$ (0.85)	
Weighted average common shares outstanding to compute net loss per share basic and diluted	83,161,927	78,670,222	83,051,151	77,605,590	

The accompanying notes are an integral part of the unaudited interim financial statements.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

STATEMENT OF STOCKHOLDERS EQUITY

For the nine Months Ended September 30, 2013

(unaudited)

(in thousands, except share and per share data)

	Stockholders Equity						
	Preferred Stock		Common Stock		Additional Paid-in Capital	Additional Paid-in Capital	Deficit Accumulated During the Development	Total Stockholders
	Shares	Amount	Shares	Amount	Common Stock	Warrants	Stage	Equity
Balance at December 31, 2012	$		83,236,840	$ 83	$ 325,177	$ 6,909	$ (283,724)	$ 48,445
Stock-based compensation					2,482			2,482
Exercise of employee stock options			570,168	1	955			956
Exercise of warrants to purchase common stock			98,359		343	(142)		201
Expired warrants					3,110	(3,110)		
Cancelled restricted stock			(163,747)					
Repurchase of shares of restricted common stock			(60,041)		(250)			(250)
Net loss							(48,203)	(48,203)
Balance at September 30, 2013	$		83,681,579	$ 84	$ 331,817	$ 3,657	$ (331,927)	$ 3,631

The accompanying notes are an integral part of the unaudited interim financial statements.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

STATEMENTS OF CASH FLOWS

(unaudited)

(in thousands)

	For the Nine Months Ended September 30,		Period from September 9, 2003 (date of inception) through September 30, 2013
	2013	2012	
Cash flows from operating activities:			
Net loss	$ (48,203)	$ (65,907)	$ (331,927)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	582	466	3,156
Stock-based compensation	2,482	3,482	22,663
Change in fair value of warrants	(2,979)	2,516	(13,750)
Loss on disposal of fixed assets	194	48	251
Common stock issued in exchange for in-process research and development			36,151
Change in operating assets and liabilities:			
(Increase) decrease in:			
Receivables	(391)	66	(449)
Prepaid expenses and other current assets	3,717	(5,922)	(3,195)
Other noncurrent assets	262	(47)	(739)
Deposits	5	(42)	(129)
Increase (decrease) in:			
Accounts payable	(618)	2,521	891
Accrued expenses	(4,943)	5,861	11,573
Deferred revenue	(600)	(600)	2,933
Deferred rent	8	226	447
Other liabilities	20		20
Net cash used in operating activities	(50,464)	(57,332)	(272,104)
Cash flows from investing activities:			
Purchases of property and equipment	(119)	(1,482)	(4,745)
Proceeds from sale of property and equipment	1		2
Net cash used in investing activities	(118)	(1,482)	(4,743)

Cash flows from financing activities:			
Stockholders capital contribution			500
Proceeds from exercise of stock options	956	30	2,329
Payments to employees for repurchase of common stock	(250)	(96)	(3,117)
Proceeds from exercise of warrants	201	330	13,280
Proceeds from issuance of common stock and warrants, net		49,170	270,726
Proceeds from issuance of preferred stock, net			16,760
Net cash provided by financing activities	907	49,434	300,478
Net increase (decrease) in cash and cash equivalents	(49,675)	(9,380)	23,631
Cash and cash equivalents, beginning of period	73,306	104,713	
Cash and cash equivalents, end of period	$ 23,631	$ 95,333	$ 23,631
Supplementary disclosure of cash flow information:			
Cash paid for interest	$	$	$
Cash paid for income taxes	$	$	$
Supplementary disclosure of noncash investing and financing activities:			
Warrants issued to placement agents and investors	$	$	$ 47,276
Preferred stock conversion to common stock	$	$	$ 16,760
Exercise of equity-classified warrants to common shares	$ 142	$ 269	$ 9,466
Exercise of liability-classified warrants to common shares	$	$ 412	$ 352

The accompanying notes are an integral part of the unaudited interim financial statements.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS

(unaudited)

1. Business

Overview

ZIOPHARM Oncology, Inc. (ZIOPHARM or the Company) is a biopharmaceutical company that seeks to acquire, develop and commercialize, on its own or with commercial partners, a diverse portfolio of cancer drugs that can address unmet medical needs through the development of a proprietary synthetic biology platform and small molecule drug candidates.

The Company s operations to date have consisted primarily of raising capital and conducting research and development. Accordingly, the Company is considered to be in the development stage at September 30, 2013. The Company s fiscal year ends on December 31.

The Company has operated at a loss since its inception in 2003 and has minimal revenues. The Company anticipates that losses will continue for the foreseeable future. At September 30, 2013, the Company s accumulated deficit was approximately $331.9 million. Following the restructuring described in Note 3, the Company currently believes that it has sufficient capital to fund development and commercialization activities into the first quarter of 2014. The Company s ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing or to achieve profitable operations, as to which no assurances can be given. Cash requirements may vary materially from those now planned because of changes in the Company s focus and direction of its research and development programs, competitive and technical advances, patent developments, regulatory changes or other developments. Additional financing will be required to continue operations after the Company exhausts its current cash resources and to continue its long-term plans for clinical trials and new product development. There can be no assurance that any such financing can be obtained by the Company, or if obtained, what the terms thereof may be, or that any amount that the Company is able to raise will be adequate to support the Company s working capital requirements until it achieves profitable operations.

Basis of Presentation

The accompanying unaudited interim financial statements have been prepared in accordance with the instructions to Form 10-Q pursuant to the rules and regulations of the Securities and Exchange Commission. Certain information and note disclosures required by generally accepted accounting principles in the United States have been condensed or omitted pursuant to such rules and regulations.

It is management s opinion that the accompanying unaudited interim financial statements reflect all adjustments (which are normal and recurring) that are necessary for a fair statement of the results for the interim periods. The unaudited interim financial statements should be read in conjunction with the audited financial statements and the notes thereto for the year ended December 31, 2012, included in the Company s Form 10-K, as amended, for such fiscal year.

The year-end balance sheet data was derived from the audited financial statements but does not include all disclosures required by generally accepted accounting principles in the United States.

The results disclosed in the Statements of Operations for the three and nine months ended September 30, 2013 are not necessarily indicative of the results to be expected for the full fiscal year.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Although the Company regularly assesses these estimates, actual results could differ from those estimates. Changes in estimates are recorded in the period in which they become known.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

1. Business (continued)

The Company s most significant estimates and judgments used in the preparation of its financial statements are:

Clinical trial expenses;

Fair value measurements for stock based compensation and warrants; and

Income taxes.

Subsequent Events

The Company evaluated all events and transactions that occurred after the balance sheet date through the date of this filing. During this period, the Company did not have any material recognizable or disclosable subsequent events.

2. Summary of Significant Accounting Policies

The Company s significant accounting policies were identified in the Company s Form 10-K, as amended, for the fiscal year ended December 31, 2012. There have been no material changes in those policies since the filing of our Form 10-K, as amended.

3. Restructuring

On April 3, 2013, the Company completed a workforce reduction plan to reduce costs as part of the Company s decision to terminate development of palifosfamide in first-line metastatic soft tissue sarcoma and place exclusive strategic focus on its synthetic biology programs, which are being developed in partnership with Intrexon Corporation (Intrexon) (see Notes 6, 7 and 9). Pursuant to the workforce reduction plan, the Company eliminated a total of 65 positions, comprised of 40 filled positions and 25 unfilled positions across various functions and locations. Employees whose positions were eliminated as part of the plan were notified beginning on April 2, 2013. Affected employees were offered separation benefits, including severance payments, and temporary healthcare coverage assistance. In connection with the elimination of filled positions as part of the workforce reduction plan, the Company incurred charges of $1.7 million during the second quarter of 2013, primarily for one-time contractual severance benefits.

On July 16, 2012, the Company announced that it restructured its management team and closed its Germantown, MD office. As a result of this action, the Company recorded a restructuring charge, consisting primarily of severance, stock based compensation associated with stock option modifications (see Note 9) and health benefit continuation costs of approximately $1.3 million. These costs are included in general and administrative expense for the nine

month period ending September 30, 2012 and the period from inception (September 9, 2003) through September 30, 2013.

On August 30, 2013, the Company entered into a sublease agreement to lease 5,249 square feet in its Boston office to a subtenant. The Company remains primarily liable to pay rent on the original lease. We recorded a loss on the sublease in the amount of $42 thousand during the three and nine months ended September 30, 2013, representing the remaining contractual obligation of $367 thousand, less $325 thousand in expected sublease revenue from our subtenant. We retired assets in this subleased area as a result of this sublease with a net book value of $194 thousand, and recorded a loss on disposal of fixed assets for the same amount in the three and nine months ended September 30, 2013.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

4. Fair Value Measurements

The Company accounts for its financial assets and liabilities using fair value measurements. The accounting standard defines fair value, establishes a framework for measuring fair value under generally accepted accounting principles and enhances disclosures about fair value measurements. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The standard describes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value which are the following:

Level 1 Quoted prices in active markets for identical assets or liabilities.

Level 2 Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Assets and liabilities measured at fair value on a recurring basis as of September 30, 2013 and December 31, 2012 are as follows:

($ in thousands)		Fair Value Measurements at Reporting Date Using		
Description	Balance as of September 30, 2013	Quoted Prices in Active Markets for Identical Assets/Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents	$ 22,680	$ 22,680	$	$
Warrant liability	$ 9,983	$	$ 9,983	$

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

4. Fair Value Measurements (continued)

($ in thousands)		Fair Value Measurements at Reporting Date Using		
Description	Balance as of December 31, 2012	Quoted Prices in Active Markets for Identical Assets/Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents	$ 72,002	$ 72,002	$	$
Warrant liability	$ 12,962	$	$ 12,962	$

The cash equivalents represent deposits in a short term United States treasury money market mutual fund quoted in an active market and classified as a Level 1 asset. The Company s Level 2 financial liabilities consist of long-term investor and placement agent warrants issued in connection with its December 2009 public offering. The warrants were valued using Binomial/Monte Carlo valuation models. See Note 8 for additional disclosures on the valuation methodology and significant assumptions.

5. Net Loss per Share

Basic net loss per share is computed by dividing net loss by the weighted average number of shares of common stock outstanding for the period. The Company s potential dilutive shares, which include outstanding common stock options, unvested restricted stock and warrants, have not been included in the computation of diluted net loss per share for any of the periods presented as the result would be anti-dilutive. Such potential shares of common stock at September 30, 2013 and 2012 consist of the following:

	September 30,	
	2013	2012
Stock options	5,730,169	5,361,487
Unvested restricted common stock	431,178	922,838
Warrants	10,392,387	11,197,454
	16,553,734	17,481,779

6. Related Party Transactions

On January 6, 2011, the Company entered into an Exclusive Channel Partner Agreement (the Channel Agreement) with Intrexon (see Note 7 for additional disclosure relating to the Channel Agreement). Our director, Randall J. Kirk,

is the CEO, a director, and the largest stockholder of Intrexon. During the nine months ended September 30, 2012, the Company paid Intrexon approximately $11.4 million, of which $4.8 million was for services already incurred and the remaining $6.6 million expected to be incurred within a year. This amount was included as part of prepaid expenses and other current assets on the balance sheet as of September 30, 2012. During the nine months ended September 30, 2013, the Company was billed $5.9 million for services performed by Intrexon, of which $4.9 million was applied to the prepaid expenses balance and the rest was accrued. As of September 30, 2013, the prepaid balance in other current assets on the accompanying balance sheet had been reduced to $0.

On January 25, 2012, Intrexon purchased 1,923,075 shares of common stock in the Company s public offering (see Note 9).

On November 7, 2012, the Company issued 3,636,926 shares of common stock to Intrexon under the terms of its Stock Purchase Agreement with Intrexon dated January 6, 2011 (see Note 9).

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies

Patent and Technology License Agreement The University of Texas M. D. Anderson Cancer Center and the Texas A&M University System.

On August 24, 2004, the Company entered into a patent and technology license agreement with The Board of Regents of the University of Texas System, acting on behalf of The University of Texas M. D. Anderson Cancer Center and the Texas A&M University System (collectively, the Licensors). Under this agreement, the Company was granted an exclusive, worldwide license to rights (including rights to United States and foreign patent and patent applications and related improvements and know-how) for the manufacture and commercialization of two classes of organic arsenicals (water- and lipid-based) for human and animal use. The class of water-based organic arsenicals includes darinaparsin.

As partial consideration for the license rights obtained, the Company made an upfront payment in 2004 of $125 thousand and granted the Licensors 250,487 shares of the Company s common stock. In addition, the Company issued options to purchase an additional 50,222 shares outside the 2003 Stock Option Plan for $0.002 per share following the successful completion of certain clinical milestones, which vested with respect to 12,555 shares upon the filing of an Investigation New Drug application (IND) for darinaparsin in 2005 and vested with respect to another 25,111 shares upon the completion of dosing of the last patient for both Phase 1 clinical trials in 2007. The Company recorded $120 thousand of stock based compensation expense related to the vesting in 2007. The remaining 12,556 shares will vest upon enrollment of the first patient in a multi-center pivotal clinical trial, i.e. a human clinical trial intended to provide the substantial evidence of efficacy necessary to support the filing of an approvable New Drug Application (NDA). In addition, the Licensors are entitled to receive certain milestone payments, including $100 thousand that was paid in 2005 upon the commencement of Phase 1 clinical trial and $250 thousand that was paid in 2006 upon the dosing of the first patient in the Company-sponsored Phase 2 clinical trial for darinaparsin. The Company may be required to make additional payments upon achievement of certain other milestones in varying amounts which on a cumulative basis could total up to an additional $4.5 million. In addition, the Licensors are entitled to receive single-digit percentage royalty payments on sales from a licensed product and will also be entitled to receive a portion of any fees that the Company may receive from a possible sublicense under certain circumstances.

The license agreement also contains other provisions customary and common in similar agreements within the industry, such as the right to sublicense the Company rights under the agreement. However, if the Company sublicenses its rights prior to the commencement of a pivotal study, i.e. a human clinical trial intended to provide the substantial evidence of efficacy necessary to support the filing of an approvable NDA, the Licensors will be entitled to receive a share of the payments received by the Company in exchange for the sublicense (subject to certain exceptions). The term of the license agreement extends until the expiration of all claims under patents and patent applications associated with the licensed technology, subject to earlier termination in the event of defaults by the Company or the Licensors under the license agreement, or if the Company becomes bankrupt or insolvent. No milestones under the license agreement were reached or expensed since 2006.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies (continued)

License Agreement with DEKK-Tec, Inc.

On October 15, 2004, the Company entered into a license agreement with DEKK-Tec, Inc., pursuant to which it was granted an exclusive, worldwide license for palifosfamide. As part of the signing of license agreement with DEKK-Tec, the Company expensed an upfront $50 thousand payment to DEKK-Tec in 2004.

In consideration for the license rights, DEKK-Tec is entitled to receive payments upon achieving certain milestones in varying amounts, which on a cumulative basis may total $4.0 million. Of the aggregate milestone payments, most will be creditable against future royalty payments as referenced below. The Company expensed a $100 thousand milestone payment upon achieving Phase 2 milestones during the year ended December 31, 2006. Additionally, in 2004 the Company issued DEKK-Tec an option to purchase 27,616 shares of the Company s common stock for $0.02 per share. Upon the execution of the license agreement, 6,904 shares vested and were subsequently exercised in 2005 and the remaining options will vest upon certain milestone events, culminating with final United States Food and Drug Administration (FDA) approval of the first NDA submitted by the Company (or by its sublicensee) for palifosfamide. DEKK-Tec is entitled to receive single-digit percentage royalty payments on the sales of palifosfamide should it be approved for commercial sale. On March 16, 2010, the Company expensed a $100 thousand milestone payment upon receiving a United States Patent for palifosfamide. In December 2010, the Company expensed a $300 thousand milestone payment and vested 6,904 stock options upon achieving Phase 3 milestones. These options were subsequently exercised in 2011. The Company s obligation to pay royalties will terminate on a country-by-country basis upon the expiration of all valid claims of patents in such country covering licensed product, subject to earlier termination in the event of defaults by the parties under the license agreement. No milestones under the license agreement were reached or expensed since 2010.

Option Agreement with Southern Research Institute (SRI)

On December 22, 2004, the Company entered into an Option Agreement with Southern Research Institute (SRI) (the Option Agreement), pursuant to which the Company was granted an exclusive option to obtain an exclusive license to SRI s interest in certain intellectual property, including exclusive rights related to certain isophosphoramide mustard analogs.

Also on December 22, 2004, the Company entered into a Research Agreement with SRI pursuant to which the Company agreed to spend a sum not to exceed $200 thousand between the execution of the agreement and December 21, 2006, including a $25 thousand payment that was made simultaneously with the execution of the agreement, to fund research and development work by SRI in the field of isophosphoramide mustard analogs. The Option Agreement was exercised on February 13, 2007. Under the license agreement entered into upon exercise of the option, the Company is required to remit minimum annual royalty payments of $25 thousand until the first commercial sale of a licensed product. These payments were made for the years ended December 31, 2008, 2009, 2010, 2011 and 2012. The Company may be required to make payments upon achievement of certain milestones in

varying amounts which on a cumulative basis could total up to $775 thousand. In addition, SRI will be entitled to receive single digit percentage royalty payments on the sales of a licensed product in any country until all licensed patents rights in that country which are utilized in the product have expired. No milestones under the license agreement were reached or expensed since the agreement s inception.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies (continued)

License Agreement with Baxter Healthcare Corporation

On November 3, 2006, the Company entered into a definitive Asset Purchase Agreement for indibulin and a License Agreement to proprietary nanosuspension technology with affiliates of Baxter Healthcare S.A. The purchase included the entire indibulin intellectual property portfolio as well as existing drug substance and capsule inventories. The terms of the Asset Purchase Agreement included an upfront cash payment of approximately $1.1 million and an additional $100 thousand payment for existing inventory, both of which were expensed in 2006. In addition to the upfront costs, the Asset Purchase Agreement includes additional diligence and milestone payments that could amount to approximately $8 million in the aggregate and royalties on net sales of products covered by a valid claim of a patent for the life of the patent on a country-by-country basis. The Company expensed a $625 thousand milestone payment upon the successful United States IND application for indibulin in 2007. The License Agreement requires payment of a $15 thousand annual patent and license prosecution/maintenance fee through the expiration of the last of the licensed patents, which is expected to expire in 2025, and single-digit royalties on net sales of licensed products covered by a valid claim of a patent for the life of the patent on a country-by-country basis. The term of the license agreement extends until the expiration of the last to expire of the patents covering the licensed products, subject to earlier termination in the event of defaults by the parties under the license agreement.

In October 2009, the Baxter License Agreement was amended to allow the Company to manufacture indibulin. During the year ended December 31, 2012, a milestone of $250 thousand was reached and expensed. No milestones under the license agreement were reached or expensed during the nine months ended September 30, 2013.

Exclusive Channel Partner Agreement with Intrexon Corporation

On January 6, 2011, we entered into the Channel Agreement, with Intrexon that governs a channel partnering arrangement in which we use Intrexon s technology directed towards *in vivo* expression of effectors in connection with the development of DC-RTS-IL-12 and Ad-RTS-IL-12 and generally to research, develop and commercialize products, in each case in which DNA is administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer, which we collectively refer to as the Cancer Program. The Channel Agreement establishes committees comprised of representatives of us and Intrexon that govern activities related to the Cancer Program in the areas of project establishment, chemistry, manufacturing and controls, clinical and regulatory matters, commercialization efforts and intellectual property.

The Channel Agreement grants us a worldwide license to use patents and other intellectual property of Intrexon in connection with the research, development, use, importing, manufacture, sale, and offer for sale of products involving DNA administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer (collectively the ZIOPHARM Products). Such license is exclusive with respect to any clinical development, selling, offering for sale or other commercialization of ZIOPHARM Products, and otherwise is non-exclusive. Subject to limited exceptions, we may not sublicense the rights described without Intrexon s written consent.

Under the Channel Agreement, and subject to certain exceptions, we are responsible for, among other things, the performance of the Cancer Program, including development, commercialization and certain aspects of manufacturing of ZIOPHARM Products. Intrexon is responsible for the costs of establishing manufacturing capabilities and facilities for the bulk manufacture of products developed under the Cancer Program, certain other aspects of manufacturing and costs of discovery-stage research with respect to platform improvements and costs of filing, prosecution and maintenance of Intrexon s patents.

Subject to certain expense allocations and other offsets provided in the Channel Agreement, we will pay Intrexon on a quarterly basis 50% of net profits derived in that quarter from the sale of ZIOPHARM Products, calculated on a ZIOPHARM Product-by- ZIOPHARM Product basis. We have likewise agreed to pay Intrexon on a quarterly basis 50% of revenue obtained in that quarter from a sublicensor in the event of a sublicensing arrangement. In addition, in partial consideration for each party s execution and delivery of the Channel Agreement, we entered into a Stock Purchase Agreement with Intrexon.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies (continued)

Intrexon may terminate the Channel Agreement if we fail to use diligent efforts to develop and commercialize ZIOPHARM Products or if we elect not to pursue the development of a Cancer Program identified by Intrexon that is a Superior Therapy as defined in the Channel Agreement. We may voluntarily terminate the Channel Agreement upon 90 days written notice to Intrexon.

Upon termination of the Channel Agreement, we may continue to develop and commercialize any ZIOPHARM Product that, at the time of termination:

- is being commercialized by us;
- has received regulatory approval;
- is a subject of an application for regulatory approval that is pending before the applicable regulatory authority; or
- is the subject of at least an ongoing Phase 2 clinical trial (in the case of a termination by Intrexon due to an uncured breach or a voluntary termination by us), or an ongoing Phase 1 clinical trial in the field (in the case of a termination by us due to an uncured breach or a termination by Intrexon following an unconsented assignment by us or our election not to pursue development of a Superior Therapy).

Our obligation to pay 50% of net profits or revenue described above with respect to these retained products will survive termination of the Channel Agreement.

Also see Notes 6 and 9.

Collaboration Agreement with Harmon Hill, LLC

On April 8, 2008, the Company signed a collaboration agreement for Harmon Hill, LLC (Harmon Hill) to provide consulting and other services for the development and commercialization of oncology therapeutics by ZIOPHARM. Under the agreement the Company has agreed to pay Harmon Hill $20 thousand per month for the consulting services and has further agreed to pay Harmon Hill (a) $500 thousand upon the first patient dosing of the Specified Drug in a pivotal trial, which trial uses a dosing Regimen introduced by Harmon Hill; and (b) provided that the Specified Drug receives regulatory approval from the FDA, the European Medicines Agency (EMA) or another regulatory agency for the marketing of the Specified Drug, a 1% royalty of the Company s net sales will be awarded to Harmon Hill. If the

Specified Drug is sublicensed to a third party, the agreement entitles Harmon Hill to 1% award of royalties or other payments received from a sublicense. Subject to renewal or extension by the parties, the term of the agreement was for a one year period that expired April 8, 2009. Following such expiration, the parties continued to operate under the terms of the agreement and, in 2010, the agreement was formally extended through April 8, 2011 and again through April 8, 2012. The agreement was extended through November 8, 2012 upon which date it expired. The Company expensed $240 thousand during the years ended December 31, 2010 and 2011 and expensed $200 thousand during the year ended December 31, 2012 for consulting services per the aforementioned agreement. No milestones under the collaboration agreement were reached or expensed since the agreement s inception.

On June 27, 2013, the Company signed a new collaboration agreement with Harmon Hill to provide consulting and other services for the development and commercialization of oncology therapeutics by ZIOPHARM, effective April 1, 2013. Under the agreement the Company has agreed to pay Harmon Hill $15 thousand per month for the consulting services. Subject to renewal or extension by the parties, the term of the agreement is for a one year period. The Company expensed $90 thousand for the nine months ended September 30, 2013.

Collaboration Agreement with Solasia Pharma K.K.

On March 7, 2011, we entered into a License and Collaboration Agreement with Solasia Pharma K.K., (Solasia).

Pursuant to the License and Collaboration Agreement, we granted Solasia an exclusive license to develop and commercialize darinaparsin in both intravenous (IV) and oral forms and related organic arsenic molecules, in all indications for human use in a pan- Asian/Pacific territory comprised of Japan, China, Hong Kong, Macau, Republic of Korea, Taiwan, Singapore, Australia, New Zealand, Malaysia, Indonesia, Philippines and Thailand.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies (continued)

As consideration for the license, we received an upfront payment of $5.0 million to be used exclusively for further clinical development of darinaparsin outside of the pan-Asian/Pacific territory, and will be entitled to receive additional payments of up to $32.5 million in development-based milestones and up to $53.5 million in sales-based milestones. We will also be entitled to receive double-digit royalty payments from Solasia based upon net sales of licensed products in the applicable territories, once commercialized, and a percentage of sublicense revenues generated by Solasia.

The upfront payment for research and development funding is earned over the period of effort. We currently estimate this period to be 75 months, which could be adjusted in the future.

Under the License and Collaboration Agreement, we provide Solasia with drug product to conduct clinical trials. These transfers are accounted for as a reduction of research and development costs and an increase in collaboration receivables.

The agreement provides that Solasia will be responsible for the development and commercialization of darinaparsin in the pan-Asian/Pacific territory.

CRO Services Agreement with PPD Development, L.P.

We are party to a Master Clinical Research Organization Services Agreement with PPD Development, L.P., or PPD, dated January 29, 2010, a related work order dated June 25, 2010 and a related work order dated April 8, 2011 under which PPD provides clinical research organization, or CRO, services in support of our clinical trials. PPD is entitled to cumulative payments of up to $20.0 million under these arrangements, which is payable by us in varying amounts upon PPD achieving specified milestones. During the year ended December 31, 2010, we expensed $1.8 million upon contract execution and $1.1 million upon a clinical study commencement of enrollment in North America. During the year ended December 31, 2011, additional milestones related to commencing enrollment in Europe, Latin America and Asia along with enrollment based milestones were met and we recorded an aggregate $4.0 million expense. During the year ended December 31, 2012, additional enrollment-based and contract modification milestones were met and expensed totaling $3.8 million. During the nine months ended September 30, 2013, patient progression and data based milestones totaling $9.2 million were met and expensed.

CRO Services Agreement with Pharmaceutical Research Associates, Inc.

On December 13, 2011, we entered into a Master Clinical Research Organization Services Agreement with Pharmaceutical Research Associates, Inc., or PRA, under which PRA provides CRO services in support of our clinical trials. PRA is entitled to cumulative payments of up to $9.5 million under these arrangements, which is payable by us in varying amounts upon PRA achieving specified milestones. During the year ended December 31, 2012, we expensed $7.3 million upon the achievement of various letter of intent and enrollment-based milestones. During the

nine months ended September 30, 2013, contract modification and patient enrollment based milestones totaling $2.2 million were met and expensed.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

7. Commitments and Contingencies (continued)

CRO Services Agreement with Novella Clinical, Inc.

On December 4, 2008, we entered into a Master Clinical Research Organization Services Agreement with Novella Clinical, Inc., or Novella, under which PRA provides CRO services in support of our clinical trials. The work order for the current trial being conducted by Novella was signed on November 2, 2012. Novella is entitled to cumulative payments of up to $790 thousand under these arrangements, which is payable by us in varying amounts upon Novella achieving specified milestones. During the year ended December 31, 2012, we expensed $256 thousand upon the achievement of various milestones. During the nine months ended September 30, 2013, two database related milestones and one site activation related milestone were met and expensed totaling $136 thousand.

8. Warrants

The Company has issued both warrants that are accounted for as liabilities and warrants that are accounted for as equity instruments. The number of warrants outstanding at September 30, 2013 and December 31, 2012 were as follows:

	September 30, 2013	December 31, 2012
Liability-classified warrants	8,050,709	8,050,709
Equity-classified warrants	2,341,678	3,146,745
Total warrants	10,392,387	11,197,454

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

8. Warrants (continued)

Liability-Classified Warrants

In May 2005, the Company issued 419,786 warrants to placement agents for services performed in connection with a 2005 private placement (the 2005 Warrants), 11,083 of which were subsequently exercised. The remaining 408,703 warrants were originally valued at $1.6 million. Subject to certain exceptions, the 2005 Warrants provide for anti-dilution protection should common stock or common stock equivalents be subsequently issued at a price less than the exercise price of the 2005 Warrants then in effect, which was initially $4.75 per share. This provision was triggered when the Company sold stock in a 2006 private placement at $4.63 per share. Accordingly, the 2005 Warrants were re-priced at $4.69. The provision was triggered a second time upon completion of a 2009 private placement in which the Company sold stock at $1.825 per share and issued common stock purchase warrants with an exercise price of $2.04, and the 2005 Warrants were re-priced at $4.25. The provision was triggered again when the Company sold stock in a December 2009 public offering at $3.10 per share and the 2005 Warrants were re-priced at $3.93 per share. Of the total warrant tranche, 419,207 were exercised and the remaining 579 expired on May 31, 2012.

Also, in connection with its December 2009 public securities offering, the Company issued warrants to purchase an aggregate of 8,206,520 shares of common stock (including the investor warrants and 464,520 warrants issued to the underwriters for the offering) (the 2009 Warrants). The 2009 Warrants issued to investors were exercisable immediately and the warrants issued to underwriters became exercisable six months after the date of issuance. The 2009 Warrants have an exercise price of $4.02 per share and have a five-year term. The fair value of the 2009 Warrants was estimated at $22.9 million using a Black-Scholes model with the following assumptions: expected volatility of 105%, risk free interest rate of 2.14%, expected life of five years and no dividends.

The Company assessed whether the 2005 Warrants and the 2009 Warrants require accounting as derivatives. The Company determined that these warrants were not indexed to the Company s own stock in accordance with accounting standards codification Topic 815, *Derivatives and Hedging*. As such, the Company has concluded these warrants did not meet the scope exception for determining whether the instruments require accounting as derivatives and were classified as liabilities.

The Company uses the Binomial/Monte Carlo pricing model to estimate the value of the liability-classified warrants. The following assumptions were used in the Binomial/Monte Carlo valuation model at September 30, 2013 and 2012:

	September 30, 2013	September 30, 2012
Risk-free interest rate	0.10%	0.23%
Expected life in years	1.19	2.19
Expected volatility	75%	70%
Expected dividend yield	0	0

Steps per year	13	12

The change in the fair value of the warrant liability resulted in a loss of $7.4 million and a gain of $3.0 million for the three and nine months ended September 30, 2013, respectively. The change in the fair value of the warrant liability resulted in a gain of $3.9 million for the three months ended September 30, 2012 and a loss of $2.5 million for the nine months ended September 30, 2012, respectively. The change in the fair value of the warrant liability was charged to other income (expense) in the Statements of Operations.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

8. Warrants (continued)

During the nine months ended September 30, 2013, warrant exercises were as follows:

(in thousands, except share data)	Equity Warrants	Liability Warrants	Common Stock Issued	Liability Reclassed to Equity	Cash Received
Cash exercises	98,359		98,359	$	$ 201
Cashless exercises					
	98,359		98,359	$	$ 201

During the nine months ended September 30, 2012, warrant exercises were as follows:

(in thousands, except share data)	Equity Warrants	Liability Warrants	Common Stock Issued	Liability Reclassed to Equity	Cash Received
Cash exercises	161,639		161,639	$	$ 330
Cashless exercises	24,658	373,617	98,021	412	
	186,297	373,617	259,660	$ 412	$ 330

During the nine months ended September 30, 2013, 706,708 warrants issued on May 3, 2006, exercisable at $5.09 per share, expired unexercised on May 3, 2013.

During the nine months ended September 30, 2012, 1,359,317 warrants issued on February 23, 2007, exercisable at $5.75 per share, expired unexercised on February 23, 2012 and 579 warrants issued on May 31, 2005, exercisable at $3.93 per share, expired unexercised on May 31, 2012.

9. Common Stock

On January 20, 2012, pursuant to an underwriting agreement between the Company and J. P. Morgan Securities LLC, as representative of the several underwriters named therein, the Company completed the sale of an aggregate 10,114,401 shares of the Company s common stock at a price of $5.20 per share in a public offering. The total gross

proceeds resulting from the 2012 public offering were approximately $52.6 million, before deducting selling commissions and expenses.

On November 7, 2012, the Company issued 3,636,926 shares of our common stock, which we refer to as the Milestone Shares, to Intrexon under the terms of its Stock Purchase Agreement with Intrexon dated January 6, 2011. Under the terms of the Stock Purchase Agreement with Intrexon, the Company agreed to issue the Milestone Shares under certain conditions upon dosing of the first patient in a ZIOPHARM-conducted Phase 2 clinical trial in the Unites States, or similar study as the parties may agree in a country other than the United States, of a product candidate that is created, produced, developed or identified directly or indirectly by us during the term of the Channel Agreement and that, subject to certain exceptions, involves DNA administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer. On October 24, 2012, the Company initiated dosing in a Phase 2 study of Ad-RTS-IL-12 for unresectable Stage III or IV melanoma, triggering the issuance of the Milestone Shares.

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

10. Stock-Based Compensation

The Company recognized stock-based compensation expense on all employee and non-employee awards as follows:

(in thousands)	For the three months ended September 30, 2013	2012	For the nine months ended September 30, 2013	2012
Research and development	$ 119	$ 363	$ 511	$ 1,305
General and administrative	690	828	1,971	2,177
Stock-based employee compensation expense	$ 809	$ 1,191	$ 2,482	$ 3,482

The Company granted 125,000 and 1,551,400 stock options during the three and nine months ended September 30, 2013 that had a weighted-average grant date fair value of $2.47 and $1.94 per share, respectively. The Company granted 76,300 and 508,700 stock options during the three and nine months ended September 30, 2012 that had a weighted-average grant date fair value of $3.95 and $3.56 per share, respectively.

At September 30, 2013, total unrecognized compensation costs related to unvested stock options outstanding amounted to $8.8 million. The cost is expected to be recognized over a weighted-average period of 1.68 years.

On July 16, 2012, the Company extended the contractual life of 829,488 fully vested stock options held by 3 employees from 12 to 18 months, and extended the vesting period for 200,000 unvested stock options and 147,427 unvested shares of restricted stock held by 2 employees from 6 to 12 months (also see Note 3 Restructuring).

On May 31, 2013, the Company extended the contractual life of 66,667 fully vested stock options held by one employee from 3 to 12 months (see Note 3 Restructuring).

On June 14, 2013, the Company extended the contractual life of 71,167 fully vested stock options held by one employee from 3 to 12 months (see Note 3 Restructuring).

Table of Contents

ZIOPHARM Oncology, Inc. (a development stage company)

NOTES TO FINANCIAL STATEMENTS (unaudited)

10. Stock-Based Compensation (continued)

For the three months ended September 30, 2013 and 2012, the fair value of stock options was estimated on the date of grant using a Black-Scholes option valuation model with the following assumptions:

	For the three months ended September 30,	
	2013	2012
Risk-free interest rate	1.61 - 1.74%	0.79 - 1.04%
Expected life in years	6	6
Expected volatility	94.96 - 95.64%	83.37 - 83.51%
Expected dividend yield	0	0

Stock option activity under the Company s stock option plan for the nine months ended September 30, 2013 is as follows:

(in thousands, except share and per share data)	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Contractual Term (Years)	Aggregate Intrinsic Value
Outstanding, December 31, 2012	7,147,303	$ 4.11		
Granted	1,551,400	2.55		
Exercised	(570,168)	1.68		
Cancelled	(2,398,366)	4.57		
Outstanding, September 30, 2013	5,730,169	$ 3.73	6.89	$ 4,255
Vested and unvested expected to vest at September 30, 2013	5,675,997	$ 3.95	4.75	$ 4,215
Options exercisable, September 30, 2013	2,996,068	$ 3.95	4.75	$ 2,203
Options exercisable, December 31, 2012	3,683,786	$ 3.56	5.28	$ 3,972
Options available for future grant	1,565,070			

A summary of the status of unvested restricted stock for the nine months ended September 30, 2013 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Non-vested, December 31, 2012	733,739	$ 4.37
Granted		
Vested	(138,814)	4.26
Cancelled	(163,747)	4.42
Non-vested, September 30, 2013	431,178	$ 4.38

At September 30, 2013, total unrecognized compensation costs related to unvested restricted stock outstanding amounted to $1.5 million. The cost is expected to be recognized over a weighted-average period of 1.32 years.

Table of Contents

Item 2. Management s Discussion and Analysis of Financial Condition and Results of Operations

Forward Looking Statements

This quarterly report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In particular, statements contained in this Form 10-Q, including but not limited to, statements regarding the costs and timing our clinical trials and of the development and commercialization of our pipeline products and services; the sufficiency of our cash, investments and cash flows from operations and our expected uses of cash; our ability to finance our operations and business initiatives and obtain funding for such activities; our future results of operations and financial position, business strategy and plan prospects, projected revenue or costs and objectives of management for future research, development or operations, are forward-looking statements. These statements relate to our future plans, objectives, expectations and intentions and may be identified by words such as may, will, should, expects, plans, anticipates, intends, targets, projects, contemplates, believes, seeks, goals, estimates, prec continue or similar words. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties, and assumptions that are difficult to predict, including those identified below, under Part II, Item 1A. Risk Factors and elsewhere herein. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. We undertake no obligation to revise or update any forward-looking statements for any reason.

Company Overview

ZIOPHARM Oncology, Inc. is a biopharmaceutical company that seeks to acquire, develop and commercialize, on its own or with commercial partners, a diverse portfolio of cancer therapies that can address unmet medical needs through synthetic biology. Pursuant to an exclusive channel agreement with Intrexon Corporation, or Intrexon, we obtained rights to Intrexon s synthetic biology platform for use in the field of oncology, which included two existing clinical stage product candidates, Ad-RTS-IL-12 + Activator Ligand and DC-RTS-IL-12 + Activator Ligand. The synthetic biology platform employs an inducible gene-delivery system that enables controlled delivery of genes that produce therapeutic proteins to treat cancer. Ad-RTS IL-12 is our lead drug candidate, which uses this gene delivery system to produce Interleukin-12, or IL-12, a potent, naturally occurring anti-cancer protein. We are currently studying Ad-RTS-IL-12 in two Phase 2 studies, the first for the treatment of metastatic melanoma, and the second for the treatment of metastatic breast cancer, and expect to announce early, preliminary data from these Phase 2 studies in the fourth quarter of 2013 and final data in 2014. We plan to continue to combine Intrexon s synthetic biology platform with our capabilities to translate science to the patient setting to develop additional products to stimulate key pathways, including those used by the body s immune system to inhibit the growth and metastasis of cancers. We have multiple programs under development and expect to file at least eight investigational new drug, or IND, applications through 2015. We also have a portfolio of small molecule drug candidates in early stages of development, which we are not actively developing ourselves but are seeking partners to pursue further development and potential commercialization.

Enabling Technology

Synthetic biology entails the application of engineering principles to biological systems for the purpose of designing and constructing new biological systems or redesigning/modifying existing biological systems. Biological systems are governed by DNA, the building blocks of gene programs, which control cellular processes by coding for the production of proteins and other molecules that have a functional purpose and by regulating the activities of these molecules. This regulation occurs via complex biochemical and cellular reactions working through intricate cell signaling pathways, and control over these molecules modifies the output of biological systems. Synthetic biology has

been enabled by the application of information technology and advanced statistical analysis, also known as bioinformatics, to genetic engineering, as well as by improvements in DNA synthesis. Synthetic biology aims to engineer gene-based programs or codes to modify cellular function to achieve a desired biological outcome. Its application is intended to allow more precise control of drug concentration and dose, thereby improving the therapeutic index associated with the resulting drug.

On January 6, 2011, we entered into an Exclusive Channel Partner Agreement with Intrexon, which we refer to as the Channel Agreement, to develop and commercialize novel DNA-based therapeutics in the field of cancer treatment by combining Intrexon s synthetic biology platform with our capabilities to translate science to the patient setting. As a result, our DNA synthetic biology platform employs an inducible gene-delivery system that enables controlled delivery of genes that produce therapeutic proteins to treat cancer. The first example of this regulated controlled delivery is achieved by producing IL-12, a potent, naturally occurring anti-cancer protein, under the control of Intrexon s proprietary biological switch to turn on/off the therapeutic protein expression at the tumor site. We and Intrexon refer to this switch as the RheoSwitch Therapeutic System® or RTS® platform. Our initial drug candidates being developed using the synthetic biology platform are Ad-RTS-IL-12 and DC-RTS-IL-12, with a current focus on Ad-RTS-IL-12.

We have demonstrated that we are able to simultaneously express multiple effectors under control of the RTS® platform from the same construct. In the mouse, we have also shown that we are able to express multigenic DNA constructs in an embedded, controlled bioreactor, by injecting into skeletal muscle and measuring the DNA-coded proteins in the blood. Furthermore, we have also demonstrated the ability to express these same three genes under RTS® platform control in mesenchymal stem cells, or MSCs.

Table of Contents

Recent Developments

On October 21 and 22, 2013, we presented preclinical data from four studies at the 2013 joint meeting of the American Association for Cancer Research, the National Cancer Institute and the European Organization for Research and Treatment of Cancer, which we refer to as the 2013 AARC-NCI-EORTC. The reported data further supports the breadth of the Intrexon synthetic biology platform technology and the ability to express immunotherapies, and other therapies, in both *in vitro* and *in vivo* models. The following summarizes the reported results:

The Controlled Local Expression of IL-12 as an Immunotherapeutic Treatment of Glioma study was designed to evaluate the viability of IL-12 expression-based therapeutic candidates in the treatment of glioma, or brain cancer. Two different RTS® controlled IL-12 expression-based therapeutic candidates were explored for the study, Ad-RTS-IL-12 (AD) and DC-RTS-IL-12 (DC), along with the orally-available small molecule activator ligand veledimex. Results demonstrated that the activator ligand achieved brain penetration in normal mouse and monkey models. Further, treatment with both AD and DC demonstrated dose-related increase in survival in a mouse model with no adverse clinical signs. Animals treated with DC > 5000 MOI (multiplicity of infection) or AD 5 x 10^9 viral particles survived throughout the duration of the study (100% survival at 75 days) with no adverse clinical signs observed. In contrast, the mean survival in the control groups was 22 (±3) days. We believe these findings support the utility of localized regulated IL-12 production as an approach for the treatment of malignant glioma.

The three additional abstracts presented at the 2013 AARC-NCI-EORTC meeting demonstrated (i) systemic expression of three distinct immune effectors from a single RTS® regulated multigenic construct in mice; (ii) in vitro data supporting the potential use of MSCs for tumor-targeted delivery of single or multiple RTS® regulated cancer immunotherapies; and (iii) data supporting functional single chain variable fragment-Fc fusion proteins as an alternate approach to monoclonal antibodies which are more amenable for multi-genic therapies. These results highlight the potential use of skeletal muscle as an embedded controllable bioreactor to generate therapeutics for tumor-targeted delivery of single or multiple RTS® regulated cancer immunotherapies which could potentially be translated into an effective clinical regimen in the treatment of cancer. Furthermore, the potential use of MSCs for tumor-targeted delivery of single or multiple RTS® regulated cancer immunotherapies could potentially be translated into an effective clinical regimen for a variety of cancers. Furthermore, RTS® driven expression of trastuzumab- and cetuximab-based scFv-Fc constructs from an embedded controllable bioreactor have potential utility as DNA-based anticancer therapeutics.

Product candidates

The following chart identifies our current synthetic biology product candidates and their stage of development, each of which are described in more detail below.

Synthetic Biology Programs:

Ad-RTS-IL-12 + Activator Ligand. Ad-RTS-IL-12 is currently being tested in two Phase 2 studies, the first for the treatment of metastatic melanoma, and the second for the treatment of non-resectable recurrent or metastatic breast cancer. Ad-RTS IL-12 is our lead drug candidate, which uses our gene delivery system to produce Interleukin-12, or IL-12, a potent, naturally occurring anti-cancer protein.

In March 2013, we announced the initiation of a randomized, open label Phase 2 clinical study of Ad-RTS-IL-12 to treat metastatic breast cancer. The two-part, multi-center U.S. study is enrolling patients with non-resectable, recurrent or metastatic breast cancer who have visible lesions or lesions accessible by injection. The primary endpoint of the study is rate of progression-free survival at 16 weeks. Secondary endpoints include objective response rate and duration of response. Initiation of the clinical study was followed by

Table of Contents

the presentation of results, from a study in a breast cancer murine preclinical model, demonstrating the anti-tumor effects and tolerability of Ad-RTS-IL-12. The data were presented at the American Association for Cancer Research 2013 Annual Meeting in April.

In May 2013, we announced promising results from nonclinical studies and a Phase 1/2 study in metastatic melanoma using Ad-RTS-IL-12. In these studies, the controlled expression of IL-12, through a regulatable gene therapy strategy, was found to limit systemic toxicity while inducing biological and clinical activity in a dose-dependent fashion. The findings were presented in an oral session at the 16th Annual Meeting of the American Society of Gene and Cell Therapy, or ASGCT. In June, updated results were presented at the 2013 American Society for Clinical Oncology, or ASCO. Ad-RTS-IL-12 + Activator Ligand induce production of IL-12 mRNA in the tumor microenvironment (switch on). Upon removal of the oral activator ligand, IL-12 mRNA levels return to baseline (switch off). Following treatment with Ad-RTS-IL-12 + Activator Ligand, increases in TILs (CD8+, CD45RO+) were observed in the tumor microenvironment. Clinical activity was observed in injected and non-injected lesions primarily at the higher doses of the activator ligand. Inflammation, shrinkage, flattening, and depigmentation of lesions correlated with the highest serum levels of IFN-g. Ad-RTS-IL-12 + Activator Ligand therapy was generally well-tolerated and its safety profile is consistent with other immunotherapies.

The Phase 1 portion of the Phase 1/2 is study is complete, and the Phase 2 portion is on-going. This Phase 2 study, a multi-center, single-arm, open-label study, is enrolling patients with unresectable Stage III or IV melanoma and further evaluating the safety and efficacy of intratumoral injections of Ad-RTS-IL-12 in combination with an oral activator ligand. Data from this Phase 2 study is expected in the fourth quarter of 2013.

We are in the process of finalizing clinical protocol designs that will lead to the initiation of Phase 2 studies in the combination with standard of care, or SOC, in first quarter 2014 for the treatment of metastatic melanoma and metastatic breast cancer. Specifically, we expect to commence enrollment in a glioblastoma mulitforme Phase 1 dose-escalation study in the first quarter of 2014, with preliminary data expected near the end of 2014; in a melanoma Phase 2 combination study with SOC study in the first quarter of 2014, with preliminary data expected near the end of 2014; and in a breast cancer Phase 2 combination study with SOC in the first quarter of 2014, with preliminary data expected in the first quarter of 2015. Melanoma, breast cancer, and glioma (detailed below) represent significant market potentials with high unmet medical needs. The incidence of melanoma is 76,690, breast cancer is 234,580, and glioblastoma is 18,000 with the majority of patients representing a high unmet medical need.

DC-RTS-IL-12 + Activator Ligand. We completed enrollment in a Phase 1 dose escalation study of DC-RTS-IL-12 in the second quarter of 2012 in the United States. DC-RTS-IL-12 employs intratumoral injection of modified dendritic cells from each patient and oral dosing of an activator ligand to turn on in vivo expression of IL-12. DC-RTS-IL-12, through the RTS® platform, controls the timing and level of transgene expression. The RTS® technology functions as a gene switch for the regulated expression of human IL-12 in the patients dendritic cells which are transduced with a replication incompetent adenoviral vector carrying the IL-12 gene under the control of the RTS® platform. Currently, there are no actively enrolling studies using DC-RTS-IL-12, as we have prioritized our clinical development efforts on Ad-RTS-IL-12.

Earlier Stage Programs. Preclinical mouse glioma studies evaluating either Ad-RTS-IL-12 or DC-RTS-IL-12 therapy demonstrated a survival benefit in all animals treated at higher doses with no adverse clinical signs and symptoms. Additional preclinical studies are currently ongoing with Ad-RTS-IL-12 to enable initiation of a Phase 1 clinical study in the first half of 2014. This Phase 1 clinical study will evaluate the safety and tolerability of the Ad-RTS-IL-12 therapy in patients with recurrent or progressive glioblastoma. Glioblastoma is by far the most frequent malignant glioma and is associated with a particularly aggressive course and dismal prognosis. The current standard of care is based on surgical resection to the maximum extent, followed by radiotherapy and concomitant adjuvant

temozolomide. Such aggressive treatment is associated with only modest improvements in survival. Newly diagnosed glioblastoma patients have a median overall survival, or OS, of 11-17 month, 2 year OS rate, between 15-17%.

We are actively pursuing several synthetic biology approaches, including gene delivery with human MSCs, functional single chain variable fragment-Fc fusion proteins and multigenic approaches in our discovery pipeline to address unmet medical needs in cancer that are expected to result in multiple INDs in 2014 and beyond. Each of the candidates has been designed, built, and tested in our discovery and preclinical program, including significant progress made to date with multigenic approaches to cancer treatment that will target more than one biologic pathway. It is currently well accepted that combining multiple immunomodulatory therapeutic modalities should have a more profound impact promoting cancer remission than monotherapies.

Small Molecule Programs

Palifosfamide, ZIO-201. The small molecule palifosfamide, or isophosphoramide mustard, is a proprietary active metabolite of the pro-drug ifosfamide. Because palifosfamide is the stabilized active metabolite of ifosfamide and a distinct pharmaceutical composition without the acrolein or chloroacetaldehyde metabolites we believe that the administration of palifosfamide may be an effective and well-tolerated agent to treat cancer. In addition to anticipated lower toxicity, palifosfamide may have other advantages over ifosfamide and cyclophosphamide. Palifosfamide cross-links DNA differently than the active metabolite of cyclophosphamide, resulting in a different activity profile. We are seeking to out-license or otherwise monetize palifosfamide.

Soft Tissue Sarcoma. Previously we have studied palifosfamide in combination with doxorubicin in patients with soft tissue sarcoma. In March 2013, we announced that the Phase 3 study, PICASSO 3, did not meet its primary endpoint of progression-free survival, and

that we would terminate our development program in metastatic soft tissue sarcoma. PICASSO 3 study data was presented at the 2013 European Cancer Congress.

Table of Contents

Small-Cell Lung Cancer. Small-Cell Lung Cancer, or SCLC, is almost exclusively associated with smoking. Standard of care for SCLC, which is etoposide and platinum therapy, has changed little in decades. Published studies of ifosfamide in combination with standard of care have evidenced enhanced efficacy but also with enhanced side effects, providing for an unfavorable benefit to risk association. We believe that combining palifosfamide with standard of care could offer a separation of enhanced efficacy with reduced toxicity.

Data from a Phase 1 trial of palifosfamide in combination with etoposide and carboplatin informed appropriate dosing for initiating an adaptive Phase 3 trial in first-line, metastatic SCLC. In June 2012, the Company initiated an international, multi-center, open-label, adaptive, randomized study of palifosfamide in combination with carboplatin and etoposide, or PaCE, chemotherapy versus carboplatin and etoposide, or CE, alone in chemotherapy naïve patients with metastatic small cell lung cancer, which we refer to as MATISSE. The trial s primary endpoint is overall survival.

Based on the outcome of PICASSO 3 in soft tissue sarcoma and the resulting revision in the company s development plans for palifosfamide, enrollment in this study was suspended with 188 patients enrolled. The interim analysis of overall survival events in MATISSE is forecasted to be reached in the first half of 2014.

Darinaparsin, ZIO-101. Darinaparsin is an anti-mitochondrial (organic arsenic) compound (covered by issued patents and pending patent applications in the United States and in foreign countries). Phase 1 testing of the intravenous, or IV, form of darinaparsin in solid tumors and hematological cancers was completed. We reported clinical activity and a safety profile from these studies as predicted by preclinical results. We subsequently completed Phase 2 studies in advanced myeloma, primary liver cancer and in certain other hematological cancers. At the May 2009 annual meeting of ASCO, we reported favorable results from the IV trial in lymphoma, particularly peripheral T-cell lymphoma, or PTCL. A Phase 1 trial in solid tumors with an oral form of darinaparsin has completed enrollment. We have obtained Orphan Drug Designation for darinaparsin in the United States and Europe for the treatment of PTCL and have entered into a licensing agreement with Solasia Pharma K.K., or Solasia, for the Asia/Pacific territory with a focus on IV-administered darinaparsin in PTCL. Clinical studies are currently ongoing with Solasia. We are seeking to out-license or otherwise monetize darinaparsin for territories not covered by our agreement with Solasia.

Indibulin, ZIO-301. Indibulin is a novel, small molecule inhibitor of tubulin polymerization and is potentially safer than other tubulin inhibitors as no neurotoxicity has been observed in preclinical studies or in Phase 1 clinical trials. Indibulin has a different pharmacological profile from other tubulin inhibitors currently on the market as it binds to a unique site on tubulin and is active in multi-drug-resistant (MDR-1, MRP-1) and taxane-resistant tumors. A Phase 1 study was conducted in late stage metastatic breast cancer and was found to be safe and tolerable. We are seeking to out-license or otherwise monetize indibulin.

Development Plans

We are currently pursuing several clinical development opportunities, principally in our synthetic biology programs. We are also evaluating additional potential preclinical candidates and continuing discovery efforts aimed at identifying other potential product candidates under our Channel Agreement with Intrexon. In addition, we may seek to enhance our pipeline in synthetic biology through highly focused strategic transactions, which may include acquisitions, partnerships and in-licensing activities. We are actively seeking to out-license some or all of our small molecule programs to further support our synthetic biology efforts.

Our current plans involve using our principal internal financial resources to develop the synthetic biology program, with the intention of ultimately partnering or otherwise raising additional capital to support further development activities for our strategic product candidates. As of September 30, 2013, we had approximately $23.6 million of cash and cash equivalents. Based upon our current plans, we anticipate that our cash resources will be sufficient to fund our

operations into the first quarter of 2014. This forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses over the next six months could vary materially and adversely as a result of a number of factors, including the factors discussed in the Risk Factors section of this report and the uncertainties applicable to our forecast for the overall sufficiency of our capital resources. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate.

Furthermore, the successful development of our product candidates is highly uncertain. Product development costs and timelines can vary significantly for each product candidate, are difficult to accurately predict, and will require us to obtain additional funding, either alone or in connection with partnering arrangements. Various statutes and regulations also govern or influence the development, manufacturing, safety, labeling, storage, record keeping and marketing of each product. The lengthy process of seeking approval and the subsequent compliance with applicable statutes and regulations require the expenditure of substantial resources. Any failure by us to obtain, or any delay in obtaining, regulatory approvals could materially, adversely affect our business. To date, we have not received approval for the sale of any product candidates in any market and, therefore, have not generated any revenues from our product candidates.

Table of Contents

Financial Overview

Overview of Results of Operations

Three and nine months ended September 30, 2013 compared to three and nine months ended September 30, 2012

Revenue. Revenue during the three and nine months ended September 30, 2013 and 2012 was as follows:

	Three months ended September 30,				Nine months ended September 30,			
($ in thousands)	**2013**	**2012**	**Change**		**2013**	**2012**	**Change**	
Collaboration revenue	$ 200	$ 200	$	0%	$ 600	$ 600	$	0%

Revenue for the three and nine months ended September 30, 2013 was the same as the three and nine months ended September 30, 2012. This is due to the continued recognition of income related to our entry into the collaboration agreement with Solasia Pharma K.K. on March 7, 2011. Under this agreement we received $5.0 million in research and development funding which we are recognizing over the estimated period of performance under the agreement, currently 75 months.

Research and development expenses. Research and development expenses during the three and nine months ended September 30, 2013 and 2012 were as follows:

	Three months ended September 30,				Nine months ended September 30,			
($ in thousands)	**2013**	**2012**	**Change**		**2013**	**2012**	**Change**	
Research and development	$ 6,247	$ 16,215	$ (9,968)	(61%)	$ 40,133	$ 48,464	$ (8,331)	(17%)

Research and development expenses for the three months ended September 30, 2013 decreased by $10.0 million when compared to the three months ended September 30, 2012. On March 26, 2013, we announced the decision to immediately terminate development of palifosfamide in first-line metastatic soft tissue sarcoma and during the quarter ended June 30, 2013, completed a workforce reduction plan to reduce costs (see Note 3 in the accompanying unaudited financial statements). This resulted in lower costs of $2.9 million related to the Phase 3 palifosfamide study in SCLC as the decision was made to suspend enrollment pending further data, lower costs related to the Phase 3 palifosfamide study in soft tissue sarcoma (STS) of $3.6 million, lower preclinical trial costs of $0.7 million, lower other clinical costs of $0.8 million, lower employee-related costs of $1.9 million, lower manufacturing costs of $1.4 million, and lower safety costs of $0.1 million. The decrease was offset by an increase of $1.4 million in discovery activities related to our synthetic biology program.

Research and development expenses for the nine months ended September 30, 2013 decreased by $8.3 million when compared to the nine months ended September 30, 2012. On March 26, 2013, we announced the decision to immediately terminate development of palifosfamide in first-line metastatic soft tissue sarcoma and during the quarter ended June 30, 2013, completed a workforce reduction plan to reduce costs (see Note 3 in the accompanying unaudited financial statements). This resulted in lower costs of $3.8 million related to the Phase 3 palifosfamide study

in SCLC as the decision was made to suspend enrollment pending further data, lower costs related to the Phase 3 palifosfamide study in STS of $2.0 million, lower preclinical trial costs of $3.4 million, lower employee-related costs of $2.5 million and lower safety costs of $0.6 million. The decrease was partially offset by an increase of $3.2 million in discovery activities related to our synthetic biology program, increased manufacturing costs of $0.7 million and increased clinical costs of $0.1 million.

Table of Contents

Our research and development expense consists primarily of salaries and related expenses for personnel, costs of contract manufacturing services, costs of facilities and equipment, fees paid to professional service providers in conjunction with our clinical trials, fees paid to research organizations in conjunction with preclinical animal studies, costs of materials used in research and development, consulting, license and milestone payments and sponsored research fees paid to third parties.

We have not accumulated and tracked our internal historical research and development costs or our personnel and personnel-related costs on a program-by-program basis. Our employee and infrastructure resources are allocated across several projects, and many of our costs are directed to broadly applicable research endeavors. As a result, we cannot state the costs incurred for each of our oncology programs on a program-by-program basis.

For the nine months ended September 30, 2013, our clinical projects consisted primarily of two Phase 3 projects for palifosfamide. The expenses for our Phase 3 palifosfamide study in STS incurred by us to third parties were $11.0 million for the nine months ended September 30, 2013 and $45.8 million from the project inception in July 2010 through September 30, 2013. The expenses for our Phase 3 palifosfamide study in SCLC incurred by us to third parties were $3.9 million for the nine months ended September 30, 2013, and $14.7 million from the project inception in December 2011 through September 30, 2013.

Our future research and development expenses in support of our current and future programs will be subject to numerous uncertainties in timing and cost to completion. We test potential products in numerous preclinical studies for safety, toxicology and efficacy. We may conduct multiple clinical trials for each product. As we obtain results from trials, we may elect to discontinue or delay clinical trials for certain products in order to focus our resources on more promising products or indications. Completion of clinical trials may take several years or more, and the length of time generally varies substantially according to the type, complexity, novelty and intended use of a product. It is not unusual for preclinical and clinical development of each of these types of products to require the expenditure of substantial resources.

We estimate that clinical trials of the type generally needed to secure new drug approval are typically completed over the following timelines:

Clinical Phase	Estimated Completion Period
Phase 1	1 - 2 years
Phase 2	2 - 3 years
Phase 3	2 - 4 years

The duration and the cost of clinical trials may vary significantly over the life of a project as a result of differences arising during clinical development, including, among others, the following:

- the number of clinical sites included in the trials;
- the length of time required to enroll suitable patents;
- the number of patients that ultimately participate in the trials;

the duration of patient follow-up to ensure the absence of long-term product-related adverse events; and

the efficacy and safety profile of the product.

As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our programs or when and to what extent we will receive cash inflows from the commercialization and sale of a product. Our inability to complete our programs in a timely manner or our failure to enter into appropriate collaborative agreements could significantly increase our capital requirements and could adversely impact our liquidity. These uncertainties could force us to seek additional, external sources of financing from time-to-time in order to continue with our product development strategy. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.

Table of Contents

General and administrative expenses. General and administrative expenses during the three and nine months ended September 30, 2013 and 2012 were as follows:

($ in thousands)	Three months ended September 30, 2013	2012	Change		Nine months ended September 30, 2013	2012	Change	
General and administrative	$ 3,068	$ 5,712	$ (2,644)	(46%)	$ 11,459	$ 15,462	$ (4,003)	(26%)

General and administrative expenses for the three months ended September 30, 2013 decreased by $2.6 million when compared to the three months ended September 30, 2012. The decrease was primarily due to lower employee-related costs of $2.0 million as a result of our workforce reduction plan (see Note 3 in the accompanying unaudited financial statements) as well as $0.6 million in non-employee contracted costs.

General and administrative expenses for the nine months ended September 30, 2013 decreased by $4.0 million when compared to the nine months ended September 30, 2012. The decrease was primarily due to lower employee-related costs of $2.7 million as a result of our workforce reduction plan (Note 3 in the accompanying unaudited financial statements) as well as $1.2 million in non-employee contracted costs and other costs of $0.1 million.

Other income (expense). Other income (expense) for the three and nine months ended September 30, 2013 and 2012 was as follows:

($ in thousands)	Three months ended September 30, 2013	2012	Change		Nine months ended September 30, 2013	2012	Change	
Other income, net	$ (191)	$ (42)	$ (149)	355%	$ (190)	$ (65)	$ (125)	192%
Change in fair value of warrants	(7,407)	3,945	(11,352)	(288%)	2,979	(2,516)	5,495	(218%)
Total	$ (7,598)	$ 3,903	$ (11,501)		$ 2,789	$ (2,581)	$ 5,370	

The decrease in total other income (expense) of $11.5 million from the three months ended September 30, 2013 compared to the three months ended September 30, 2012 was primarily due to the change in the fair value of liability-classified warrants which was driven by an increase in our stock price.

The decrease in total other income (expense) of $5.4 million from the nine months ended September 30, 2013 compared to the nine months ended September 30, 2012 was primarily due to the change in the fair value of liability-classified warrants which was driven by a decrease in our stock price.

Table of Contents

Liquidity and Capital Resources

As of September 30, 2013, we had approximately $23.6 million in cash and cash equivalents, compared to $73.3 million in cash and cash equivalents as of December 31, 2012. We anticipate that our cash resources will be sufficient to fund our operations into the first quarter of 2014. However, changes may occur that would cause us to consume our existing capital prior to that time, including the scope and progress of our research and development efforts and changes in governmental regulation. Additionally, actual costs may ultimately vary from our current expectations, which could materially impact our use of capital and our forecast of the period of time through which our financial resources will be adequate to support our operations. We have estimated the sufficiency of our cash resources based in part on the discontinuation of the PICASSO 3 pivotal trial for first-line metastatic STS and our adaptive Phase 3 trial for first-line SCLC for IV palifosfamide and our current timing expectations for interim overall survival data in the MATISSE trial. Also included in the estimate are the advancement of our synthetic biology product candidates in the clinic under our exclusive channel partnership with Intrexon, and we expect that the costs associated with these and additional product candidates will increase the level of our overall research and development expenses significantly going forward.

Although all human clinical trials are expensive and difficult to design and implement, we believe that due to complexity, costs associated with clinical trials for synthetic biology products are greater than the corresponding costs associated with clinical trials for small molecule candidates.

In addition to these factors, our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

Table of Contents

We expect that we will need additional financing to support our long-term plans for clinical trials and new product development. We expect to finance our cash needs through the sale of equity securities, strategic collaborations and/or debt financings, or through other sources that may be dilutive to existing stockholders. There can be no assurance that we will be able to obtain funding from any of these sources or, if obtained, what the terms of such funding(s) may be, or that any amount that we are able to obtain will be adequate to support our working capital requirements until we achieve profitable operations. We have no current committed sources of additional capital but are constantly assessing market conditions so that we may take advantage of financing opportunities. Recently, capital markets have experienced a period of instability that may severely hinder our ability to raise capital within the time periods needed or on terms we consider acceptable, if at all. If we are unable to raise additional funds when needed, we may not be able to continue development and regulatory approval of our products, or we could be required to delay, scale back or eliminate some or all our research and development programs.

The following table summarizes our net increase (decrease) in cash and cash equivalents for the nine months ended September 30, 2013 and 2012:

	Nine months ended September 30,	
	2013	**2012**
($ in thousands)		
Net cash provided by (used in):		
Operating activities	$ (50,464)	$ (57,332)
Investing activities	(118)	(1,482)
Financing activities	907	49,434
Net increase (decrease) in cash and cash equivalents	$ (49,675)	$ (9,380)

Net cash used in operating activities was $50.5 million for the nine months ended September 30, 2013 compared to $57.3 million for the nine months ended September 30, 2012. The $6.8 million decrease was primarily due to a decrease in cash used for prepaid expenses, offset by an increase in accrued expenses.

Net cash used in investing activities was $0.1 million for the nine months ended September 30, 2013 compared to $1.4 million for the nine months ended September 30, 2012. The decrease was due to decreased spending on property, plant, and equipment in the New York and Boston offices.

Net cash provided by financing activities was $0.9 million for the nine months ended September 30, 2013 compared to $49.4 million for the nine months ended September 30, 2012. The change is primarily attributable to a $49.2 million financing that occurred during the first nine months of 2012, partially offset by an increase in stock option and warrant activity in the amount of $0.7 million.

Table of Contents

Operating capital and capital expenditure requirements

We anticipate that losses will continue for the foreseeable future. At September 30, 2013, our accumulated deficit was approximately $331.9 million. Our actual cash requirements may vary materially from those planned because of a number of factors including:

- Changes in the focus, direction and pace of our development programs;
- Competitive and technical advances;
- Internal costs associated with the development of the synthetic biology programs, palifosfamide, indibulin and our ability to secure further financing for darinaparsin development from a partner;
- Our ability to secure partnering arrangements;
- Costs of filing, prosecuting, defending and enforcing any patent claims and any other intellectual property rights, or other developments; and
- Other matters identified under Part II Item 1A. Risk Factors below.

Working capital as of September 30, 2013 was $13.9 million, consisting of $27.3 million in current assets and $13.4 million in current liabilities. Working capital as of December 31, 2012 was $61.4 million, consisting of $80.3 million in current assets and $18.9 million in current liabilities.

Contractual obligations

The following table summarizes our outstanding obligations as of September 30, 2013 and the effect those obligations are expected to have on our liquidity and cash flows in future periods:

($ in thousands)	Total	Less than 1 year	2 - 3 years	4 - 5 years	More than 5 years
Operating leases	$ 4,647	$ 1,185	$ 2,416	$ 1,004	$ 42
Royalty and license fees	1,400	275	550	550	25
Contract milestone payments	398	36	362		
Total	$ 6,445	$ 1,496	$ 3,328	$ 1,554	$ 67

Our commitments for operating leases relate to the lease for our corporate headquarters in Boston, MA, and office space in New York, NY. Our commitments for royalty and license fees relate to our patent agreement with Baxter Healthcare Corporation and our royalty agreements with Southern Research Institute and Baxter Healthcare

Corporation requiring minimum royalty payments. The contract milestone payments relate to our CRO agreements with Novella Clinical, Inc. Our contract milestone payments have been reduced from prior periods and are being replaced with service based payments. The timing of the remaining contract milestone payments are dependent upon factors that are beyond our control, including our ability to recruit patients, the outcome of future clinical trials and any requirements imposed on our clinical trials by regulatory agencies. However, for the purpose of the above table, we have assumed that the payment of the milestones will occur within five years of September 30, 2013. On July 16, 2012, we decided to close our Germanton, Maryland office. In June 2013, we paid off the remainder of the Germantown, Maryland lease obligation. Included in the above table are obligations for the subleased portion of our Boston office as noted below and in Note 3. We expect to receive a total of $98 thousand in the next year and $226 thousand in the next 2-3 years from our subtenant.

On August 30, 2013, the Company entered into a sublease agreement to lease 5,249 square feet in its Boston office to a subtenant. The Company remains primarily liable to pay rent on the original lease. We recorded a loss on the sublease in the amount of $42 thousand during the three and nine months ended September 30, 2013, representing the remaining contractual obligation of $367 thousand, less $325 thousand in expected sublease revenue from our subtenant. We retired assets in this subleased area as a result of this sublease with a net book value of $194 thousand, and recorded a loss on disposal of fixed assets for the same amount in the three and nine months ended September 30, 2013.

Table of Contents

Off-balance sheet arrangements

During the nine months ended September 30, 2013 and 2012, we did not engage in any off-balance sheet arrangements.

Critical Accounting Policies and Estimates

In our Annual Report on Form 10-K, as amended, for the fiscal year ended December 31, 2012, our most critical accounting policies and estimates upon which our financial status depends were identified as those relating to stock-based compensation; net operating losses and tax credit carryforwards; and impairment of long-lived assets. We reviewed our policies and determined that those policies remain our most critical accounting policies for the nine months ended September 30, 2013.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Our exposure to market risk is limited to our cash. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary control of cash. We also seek to maximize income from our investments without assuming significant risk. To achieve our goals, we maintain our cash in interest-bearing bank accounts in global banks, United States treasuries and other government-backed investments, which are subject to minimal interest rate risk.

Item 4. Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) or 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act) as of the end of the period covered by this report. Based on such evaluation, our principal executive officer and principal financial officer have concluded that, as of the end of such period, our disclosure controls and procedures were effective in ensuring that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, on a timely basis, and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

No change in our internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) occurred during the period covered by this quarterly report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Table of Contents

Part II Other Information

Item 1. Legal Proceedings

In the ordinary course of business, we may periodically become subject to legal proceedings and claims arising in connection with ongoing business activities. The results of litigation and claims cannot be predicted with certainty, and unfavorable resolutions are possible and could materially affect our results of operations, cash flows or financial position. In addition, regardless of the outcome, litigation could have an adverse impact on us because of defense costs, diversion of management resources and other factors.

While the outcome of these proceedings and claims cannot be predicted with certainty, there are no matters, as of September 30, 2013, that, in the opinion of management, might have a material adverse effect on our financial position, results of operations or cash flows.

Item 1A. Risk Factors

The following important factors could cause our actual business and financial results to differ materially from those contained in forward-looking statements made in this Quarterly Report on Form 10-Q or elsewhere by management from time to time. The risk factors in this report have been revised to incorporate changes to our risk factors from those included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2012. The risk factors set forth below with an asterisk (*) next to the title are new risk factors or risk factors containing changes, which may be material, from the risk factors previously disclosed in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2012, as filed with the Securities and Exchange Commission.

RISKS RELATED TO OUR BUSINESS

**** We will require additional financial resources in order to continue ongoing development of our product candidates; if we are unable to obtain these additional resources, we may be forced to delay or discontinue clinical testing of our product candidates.***

We have not generated significant revenue and have incurred significant net losses in each year since our inception. For the nine months ended September 30, 2013, we had a net loss of $48.2 million, and, as of September 30, 2013, we had incurred approximately $331.9 million of cumulative net losses since our inception in 2003. We expect to continue to incur significant operating expenditures and net losses. Further development of our product candidates, including product candidates that we may develop under our Channel Agreement with Intrexon, will likely require substantial increases in our expenses as we:

Continue to undertake clinical trials for product candidates;

Scale-up the formulation and manufacturing of our product candidates;

Seek regulatory approvals for product candidates;

Implement additional internal systems and infrastructure; and

Hire additional personnel as required.

We continue to seek additional financial resources to fund the further development of our product candidates. If we are unable to obtain sufficient additional capital, one or more of these programs could be placed on hold. Because we are currently devoting a significant portion of our resources to the development of synthetic biology and our adaptive Phase 3 trial for first-line SCLC for IV palifosfamide, MATISSE, further progress with the development of our other candidates may be significantly delayed and may depend on the licensing of those compounds to third parties.

We anticipate that our cash resources will be sufficient to fund our operations into the first quarter of 2014, and we have no current committed sources of additional capital. As a result, our independent registered public accounting firm has expressed a substantial doubt about our ability to continue as a going concern in their report on our financial statements. We do not know whether additional financing will be available on terms favorable or acceptable to us when needed, if at all. Our business is highly cash-intensive and our ability to continue operations after our current cash resources are exhausted depends on our ability to obtain additional financing and/or achieve profitable operations, as to which no assurances can be given. If adequate additional funds are not available when required, or if we are unsuccessful in entering into partnership agreements for the further development of our products, we will be required to delay, reduce or eliminate planned preclinical and clinical trials and may be forced to terminate the approval process for our product candidates from the FDA or other regulatory authorities. In addition, we could be forced to discontinue product development, forego attractive business opportunities or pursue merger or divestiture strategies. In the event we are unable to obtain additional financing, we may be forced to cease operations altogether.

Table of Contents

**** We need to raise additional capital to fund our operations. The manner in which we raise any additional funds may affect the value of your investment in our common stock.***

As of September 30, 2013, we had incurred approximately $331.9 million of cumulative net losses and had approximately $23.6 million of cash and cash equivalents. We anticipate that our cash resources will be sufficient to fund our operations into the first quarter of 2014. Following negative results in our PICASSO 3 pivotal trial in first-line STS in March 2013, we implemented a workforce reduction plan and other cost-cutting measures in an attempt to extend our cash resources as long as possible, though there are no assurances that such efforts will be effective. In addition, changes may occur that would consume our existing capital prior to the first quarter of 2014, including expansion of the scope of, and/or slower than expected progress of, our research and development efforts and changes in governmental regulation. As a result, our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern in their report on our financial statements. Actual costs may ultimately vary from our current expectations, which could materially impact our use of capital and our forecast of the period of time through which our financial resources will be adequate to support our operations. We have estimated the sufficiency of our cash resources based in part on the discontinuation of the PICASSO 3 pivotal trial for first-line metastatic STS and our adaptive Phase 3 trial for first-line SCLC for IV palifosfamide and our current timing expectations for the interim analysis of data in the MATISSE trial. Also our estimates include the advancement of our synthetic biology product candidates in the clinic under our Channel Agreement with Intrexon, and we expect that the costs associated with these and additional product candidates will increase the level of our overall research and development expenses significantly going forward.

In addition to above factors, our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

The unpredictability of the capital markets may severely hinder our ability to raise capital within the time periods needed or on terms we consider acceptable, if at all. Moreover, if we fail to advance one or more of our current product candidates to later-stage clinical trials, successfully commercialize one or more of our product candidates, or acquire new product candidates for development, we may have difficulty attracting investors that might otherwise be a source of additional financing.

Our need for additional capital and limited capital resources may force us to accept financing terms that could be significantly dilutive to existing stockholders. To the extent that we raise additional capital by issuing equity securities, our stockholders may experience dilution. In addition, we may grant future investors rights superior to those of our existing stockholders. If we raise additional funds through collaborations and licensing arrangements, it may be necessary to relinquish some rights to our technologies, product candidates or products, or grant licenses on terms that are not favorable to us. If we raise additional funds by incurring debt, we could incur significant interest expense and become subject to covenants in the related transaction documentation that could affect the manner in which we conduct our business.

Table of Contents

**** Clinical trials are very expensive, time-consuming, and difficult to design and implement.***

Human clinical trials are very expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial process itself is also time-consuming and results are inherently uncertain. We estimate that clinical trials of our product candidates will take at least several years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to abandon or repeat clinical trials. The commencement and completion of clinical trials may be delayed by several factors, including:

- Unforeseen safety issues;
- Determination of dosing issues;
- Lack of effectiveness during clinical trials;
- Slower than expected rates of patient recruitment and enrollment;
- Inability to monitor patients adequately during or after treatment;
- Inability or unwillingness of medical investigators to follow our clinical protocols; and
- Regulatory determinations to temporarily or permanently cease enrollment for other reasons not related to patient safety.

Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful. For example, despite positive findings in earlier clinical trials, our product candidate palifosfamide failed to meet the primary endpoint of the Phase 3 PICASSO 3 trail. In addition, we or the FDA may suspend our clinical trials at any time if it appears that we are exposing participants to unacceptable health risks or if the FDA finds deficiencies in our IND submission or in the conduct of these trials.

See also Risk Factors *Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to file an NDA or BLA with the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business*.

**** We may not be able to obtain or maintain orphan drug exclusivity for our product candidates.***

We have received Orphan Drug designations for darinaparsin for the treatment of peripheral T-cell lymphoma in both the United States and Europe, and we may be able to receive additional Orphan Drug designation from the FDA and the EMA for other product candidates. In the United States, orphan designation is available to drugs intended to treat, diagnose or prevent a rare disease or condition that affects fewer than 200,000 people in the United States at the time of application for orphan designation. Orphan designation qualifies the sponsor of the product for a tax credit and

marketing incentives. The first sponsor to receive FDA marketing approval for a drug with an orphan designation is entitled to a seven-year exclusive marketing period in the United States for that product for that indication and, typically, a waiver of the prescription drug user fee for its marketing application. However, a drug that the FDA considers to be clinically superior to, or different from, the approved orphan drug, even though for the same indication, may also obtain approval in the United States during the seven-year exclusive marketing period. Orphan drug exclusive marketing rights may also be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug. There is no guarantee that any of our other product candidates will receive Orphan Drug designation or that, even if such product candidate is granted such status, the product candidate s clinical development and regulatory approval process will not be delayed or will be successful.

Table of Contents

We may not be able to commercialize any products, generate significant revenues, or attain profitability.

To date, none of our product candidates have been approved for commercial sale in any country. The process to develop, obtain regulatory approval for, and commercialize potential drug candidates is long, complex, and costly. Unless and until we receive approval from the FDA and/or other regulatory authorities for our product candidates, we cannot sell our drugs and will not have product revenues. Even if we obtain regulatory approval for one or more of our product candidates, if we are unable to successfully commercialize our products, we may not be able to generate sufficient revenues to achieve or maintain profitability, or to continue our business without raising significant additional capital, which may not be available. Our failure to achieve or maintain profitability could negatively impact the trading price of our common stock.

**** Ethical, legal and social concerns about synthetic biologically engineered products could limit or prevent the use of our product candidates.***

Our products candidates use a synthetic biology platform. Public perception about the safety and environmental hazards of, and ethical concerns over, genetically engineered products could influence public acceptance of our product candidates. If we are not able to overcome the ethical, legal and social concerns relating to synthetic biological engineering, our product candidates may not be accepted. These concerns could result in increased expenses, regulatory scrutiny, delays or other impediments to the public acceptance and commercialization of our product candidates. Our ability to develop and commercialize products could be limited by public attitudes and governmental regulation.

The subject of genetically modified organisms has received negative publicity, which has aroused public debate. This adverse publicity could lead to greater regulation and trade restrictions on imports of genetically altered products. Further, there is a risk that our product candidates could cause adverse health effects or other adverse events, which could also lead to negative publicity.

The synthetic biological platform that we use may have significantly enhanced characteristics compared to those found in naturally occurring organisms, enzymes or microbes. While we believe we produce synthetic biological technologies only for use in a controlled laboratory and industrial environment, the release of such synthetic biological technologies into uncontrolled environments could have unintended consequences. Any adverse effect resulting from such a release could have a material adverse effect on our business and financial condition, and we may have exposure to liability for any resulting harm.

**** Our use of synthetic biology to develop product candidates may become subject to increasing regulation in the future.***

Most of the laws and regulations concerning synthetic biology relate to the end products produced using synthetic biology, but that may change. For example, the Presidential Commission for the Study of Bioethical Issues in December 2010 recommended that the federal government oversee, but not regulate, synthetic biology research. The Presidential Commission also recommended that the government lead an ongoing review of developments in the synthetic biology field. Synthetic biology may become subject to additional government regulations as a result of the recommendations, which could require us to incur significant additional capital and operating expenditures and other costs in complying with these laws and regulations.

****The technology on which our Channel Agreement with Intrexon Corporation is based in part on early stage technology in the field of human oncologic therapeutics.***

Our Channel Agreement with Intrexon contemplates our using Intrexon s advanced transgene engineering platform for the controlled and precise cellular production of anti-cancer effectors. The synthetic biology effector platform in which we have acquired rights represents early-stage technology in the field of human oncologic biotherapeutics, with DC-RTS-IL-12 having completed a Phase 1 study in melanoma and Ad-RTS-IL-12 currently in two Phase 2 studies, in melanoma and breast cancer. Although we plan to leverage Intrexon s synthetic biology platform for additional products targeting key pathways used by cancers to grow and metastasize, we may not be successful in developing and commercializing these products for a variety of reasons. The risk factors set forth herein that apply to our small molecule drug candidates, which are in various stages of development, also apply to product candidates that we seek to develop under our Channel Agreement with Intrexon.

**** We will incur additional expenses in connection with our Channel Agreement with Intrexon Corporation.***

The synthetic biology platform, in which we have acquired rights for cancer from Intrexon, includes two existing product candidates, DC-RTS-IL-12 and Ad-RTS-IL-12. Upon entry into the Channel Agreement with Intrexon, we assumed responsibility for the clinical development of these product candidates, which we expect will increase the level of our overall research and development expenses significantly going forward. Although all human clinical trials are expensive and difficult to design and implement, we believe that due to complexity, costs associated with clinical trials for synthetic biology products are greater than the corresponding costs associated with clinical trials for small molecule candidates. In addition to increased research and development costs, prior to the adoption of our March 2013 workforce reduction plan, we added headcount in part to support our Channel Agreement endeavors, and we may need to do so again in the future which would add to our general and administrative expenses going forward.

Table of Contents

Although our forecasts for expenses and the sufficiency of our capital resources takes into account our plans to develop the Intrexon products, we assumed development responsibility for these products on January 6, 2011, and the actual costs associated therewith may be significantly in excess of forecasted amounts. In addition to the amount and timing of expenses related to the clinical trials, our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates and costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

We may not be able to retain the exclusive rights licensed to us by Intrexon Corporation to develop and commercialize products involving DNA administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer.

Under the Channel Agreement, we use Intrexon s technology directed towards in vivo expression of effectors in connection with the development of DC-RTS-IL-12 and Ad-RTS-IL-12 and generally to research, develop and commercialize products, in each case in which DNA is administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer, which we collectively refer to as the Cancer Program. The Channel Agreement grants us a worldwide license to use patents and other intellectual property of Intrexon in connection with the research, development, use, importing, manufacture, sale, and offer for sale of products involving DNA administered to humans for expression of anti-cancer effectors for the purpose of treatment or prophylaxis of cancer, which we refer to collectively as the ZIOPHARM Products. Such license is exclusive with respect to any clinical development, selling, offering for sale or other commercialization of ZIOPHARM Products, and otherwise is non-exclusive. Subject to limited exceptions, we may not sublicense the rights described without Intrexon s written consent. Under the Channel Agreement, and subject to certain exceptions, we are responsible for, among other things, the performance of the Cancer Program, including development, commercialization and certain aspects of manufacturing of ZIOPHARM Products.

Intrexon may terminate the Channel Agreement if we fail to use diligent efforts to develop and commercialize ZIOPHARM Products or if we elect not to pursue the development of a Cancer Program identified by Intrexon that is a Superior Therapy as defined in the Channel Agreement. We may voluntarily terminate the Channel Agreement upon 90 days written notice to Intrexon. Upon termination of the Channel Agreement, we may continue to develop and commercialize any ZIOPHARM Product that, at the time of termination:

- is being commercialized by us;
- has received regulatory approval;
- is a subject of an application for regulatory approval that is pending before the applicable regulatory authority; or

is the subject of at least an ongoing Phase 2 clinical trial (in the case of a termination by Intrexon due to an uncured breach or a voluntary termination by us), or an ongoing Phase 1 clinical trial in the field (in the case of a termination by us due to an uncured breach or a termination by Intrexon following an unconsented assignment by us or our election not to pursue development of a Superior Therapy).

Our obligation to pay 50% of net profits or revenue as described further in our Annual Report on Form 10-K under the heading *Business License Agreements, Intellectual Property and Other Agreements Exclusive Channel Partner Agreement with Intrexon Corporation* with respect to these retained products will survive termination of the Channel Agreement.

There can be no assurance that we will be able to successfully perform under the Channel Agreement and if the Channel Agreement is terminated it may prevent us from achieving our business objectives.

Table of Contents

We have a limited operating history upon which to base an investment decision.

We are a development-stage company that was incorporated in September 2003. To date, we have not demonstrated an ability to perform the functions necessary for the successful commercialization of any product candidates. The successful commercialization of any product candidates will require us to perform a variety of functions, including:

- Continuing to undertake preclinical development and clinical trials;
- Participating in regulatory approval process;
- Formulating and manufacturing products; and
- Conducting sales and marketing activities.

Our operations have been limited to organizing and staffing our company, acquiring, developing and securing our proprietary product candidates, and undertaking preclinical and clinical trials of our product candidates. These operations provide a limited basis for you to assess our ability to commercialize our product candidates and the advisability of investing in our securities.

Because we currently neither have nor intend to establish internal research capabilities, we are dependent upon pharmaceutical and biotechnology companies and academic and other researchers to sell or license us their product candidates and technology.

Proposing, negotiating, and implementing an economically viable product acquisition or license is a lengthy and complex process. We compete for partnering arrangements and license agreements with pharmaceutical, biopharmaceutical, and biotechnology companies, many of which have significantly more experience than we do, and have significantly more financial resources. Our competitors may have stronger relationships with certain third parties including academic research institutions, with whom we are interested in collaborating and may have, therefore, a competitive advantage in entering into partnering arrangements with those third parties. We may not be able to acquire rights to additional product candidates on terms that we find acceptable, or at all.

We expect that any product candidate to which we acquire rights will require significant additional development and other efforts prior to commercial sale, including extensive clinical testing and approval by the FDA and applicable foreign regulatory authorities. All drug product candidates are subject to the risks of failure inherent in pharmaceutical product development, including the possibility that the product candidate will not be shown to be sufficiently safe or effective for approval by regulatory authorities. Even if our product candidates are approved, they may not be economically manufactured or produced, or be successfully commercialized.

We actively evaluate additional product candidates to acquire for development. Such additional product candidates, if any, could significantly increase our capital requirements and place further strain on the time of our existing personnel, which may delay or otherwise adversely affect the development of our existing product candidates. We must manage our development efforts and clinical trials effectively, and hire, train and integrate additional management, administrative, and sales and marketing personnel. We may not be able to accomplish these tasks, and our failure to accomplish any of them could prevent us from successfully growing.

We may not be able to successfully manage our growth.

In the future, if we are able to advance our product candidates to the point of, and thereafter through, clinical trials, we will need to expand our development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide for these capabilities. Any future growth will place a significant strain on our management and on our administrative, operational, and financial resources. Therefore, our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To manage this growth, we must expand our facilities, augment our operational, financial and management systems, and hire and train additional qualified personnel. If we are unable to manage our growth effectively, our business may be harmed.

Table of Contents

Our business will subject us to the risk of liability claims associated with the use of hazardous materials and chemicals.

Our contract research and development activities may involve the controlled use of hazardous materials and chemicals. Although we believe that our safety procedures for using, storing, handling and disposing of these materials comply with federal, state and local laws and regulations, we cannot completely eliminate the risk of accidental injury or contamination from these materials. In the event of such an accident, we could be held liable for any resulting damages and any liability could have a materially adverse effect on our business, financial condition, and results of operations. In addition, the federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of hazardous or radioactive materials and waste products may require our contractors to incur substantial compliance costs that could materially adversely affect our business, financial condition, and results of operations.

**** We rely on key executive officers and scientific and medical advisors, and their knowledge of our business and technical expertise would be difficult to replace.***

We are highly dependent on Dr. Jonathan Lewis, our Chief Executive Officer, Caesar J. Belbel, our Executive Vice President and Chief Legal Officer and our principal scientific, regulatory, and medical advisors. Dr. Lewis , and Mr. Belbel s employment are governed by written employment agreements. The employment agreement with Dr. Lewis provides for a term that expires in January 2014. Dr. Lewis and Mr. Belbel may terminate their employment with us at any time, subject, however, to certain non-compete and non-solicitation covenants. The loss of the technical knowledge and management and industry expertise of Dr. Lewis and Mr. Belbel, or any of our other key personnel, could result in delays in product development, loss of customers and sales, and diversion of management resources, which could adversely affect our operating results. We do not carry key person life insurance policies on any of our officers or key employees.

If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We will need to hire additional qualified personnel with expertise in preclinical and clinical research and testing, government regulation, formulation and manufacturing, and eventually, sales and marketing. We compete for qualified individuals with numerous biopharmaceutical companies, universities, and other research institutions. Competition for such individuals is intense and we cannot be certain that our search for such personnel will be successful. Attracting and retaining qualified personnel will be critical to our success. If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

Table of Contents

We may incur substantial liabilities and may be required to limit commercialization of our products in response to product liability lawsuits.

The testing and marketing of medical products entail an inherent risk of product liability. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our products, if approved. Even a successful defense would require significant financial and management resources. Regardless of the merit or eventual outcome, liability claims may result in:

Decreased demand for our product candidates;

Injury to our reputation;

Withdrawal of clinical trial participants;

Withdrawal of prior governmental approvals;

Costs of related litigation;

Substantial monetary awards to patients;

Product recalls;

Loss of revenue; and

The inability to commercialize our product candidates.

We currently carry clinical trial insurance and product liability insurance. However, an inability to renew our policies or to obtain sufficient insurance at an acceptable cost could prevent or inhibit the commercialization of pharmaceutical products that we develop, alone or with collaborators.

**** Our business and operations would suffer in the event of system failures.***

Despite the implementation of security measures, our internal computer systems and those of our current and future contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we are not aware of any such material system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Likewise, we rely on third parties to manufacture

our drug candidates and conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our drug candidates could be delayed.

RISKS RELATED TO THE CLINICAL TESTING, REGULATORY APPROVAL AND MANUFACTURING OF OUR PRODUCT CANDIDATES

**** If we are unable to obtain the necessary U.S. or worldwide regulatory approvals to commercialize any product candidate, our business will suffer.***

We may not be able to obtain the approvals necessary to commercialize our product candidates, or any product candidate that we may acquire or develop in the future for commercial sale. We will need FDA approval to commercialize our product candidates in the United States and approvals from regulatory authorities in foreign jurisdictions equivalent to the FDA to commercialize our product candidates in those jurisdictions. In order to obtain FDA approval of any product candidate, we must submit to the FDA an NDA or Biologics License Application (BLA) demonstrating that the product candidate is safe for humans and effective for its intended use. This demonstration requires significant research and animal tests, which are referred to as preclinical studies, as well as human tests, which are referred to as clinical trials. Satisfaction of the FDA s regulatory requirements typically takes many years, depending upon the type, complexity, and novelty of the product candidate, and will require substantial resources for research, development, and testing. We cannot predict whether our research, development, and clinical approaches will result in drugs that the FDA will consider safe for humans and effective for their intended uses. The FDA has substantial discretion in the drug approval process and may require us to conduct additional preclinical and clinical testing or to perform post-marketing studies. The approval process may also be

Table of Contents

delayed by changes in government regulation, future legislation, or administrative action or changes in FDA policy that occur prior to or during our regulatory review. Delays in obtaining regulatory approvals may:

- Delay commercialization of, and our ability to derive product revenues from, our product candidates;
- Impose costly procedures on us; and
- Diminish any competitive advantages that we may otherwise enjoy.

Table of Contents

Even if we comply with all FDA requests, the FDA may ultimately reject one or more of our NDAs or BLAs. We cannot be sure that we will ever obtain regulatory approval for any of our product candidates. Failure to obtain FDA approval for our product candidates will severely undermine our business by leaving us without a saleable product, and therefore without any potential revenue source, until another product candidate can be developed. There is no guarantee that we will ever be able to develop or acquire another product candidate or that we will obtain FDA approval if we are able to do so.

In foreign jurisdictions, we similarly must receive approval from applicable regulatory authorities before we can commercialize any drugs. Foreign regulatory approval processes generally include all of the risks associated with the FDA approval procedures described above.

Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit an NDA or BLA to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business.

Our product candidates are in various stages of development and require extensive clinical testing. Notwithstanding our current clinical trial plans for each of our existing product candidates, we may not be able to commence additional trials or see results from these trials within our anticipated timelines. As such, we cannot predict with any certainty if or when we might submit an NDA or BLA for regulatory approval of our product candidates or whether such an NDA or BLA will be accepted. Because we do not anticipate generating revenues unless and until we submit one or more NDAs or BLAs and thereafter obtain requisite FDA approvals, the timing of our NDA or BLA submissions and FDA determinations regarding approval thereof, will directly affect if and when we are able to generate revenues.

Table of Contents

**** The results of our clinical trials may not support our product candidate claims.***

Even if our clinical trials are completed as planned, we cannot be certain that their results will support approval of our product candidates. The FDA normally expects two randomized, well-controlled Phase 3 pivotal studies in support of approval of an NDA or BLA. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be certain that the results of later clinical trials will replicate the results of prior clinical trials and preclinical testing. For example, despite positive findings in earlier clinical trials, our product candidate palifosfamide failed to meet the primary endpoints of the Phase 3 PICASSO 3 trial, causing us to suspend clinical development of palifosfamide in soft tissue sarcoma. The clinical trial process may fail to demonstrate that our product candidates are safe for humans and effective for the indicated uses. This failure would cause us to abandon a product candidate and may delay development of other product candidates. Any delay in, or termination of, our clinical trials will delay the submission of our NDAs or BLAs with the FDA and, ultimately, our ability to commercialize our product candidates and generate product revenues. In addition, our clinical trials involve small patient populations. Because of the small sample size, the results of these clinical trials may not be indicative of future results.

**** Our synthetic biology product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, no gene therapy products have been approved in the United States and only one product has been approved in Europe.***

We have recently focused our product research and development efforts on our synthetic biology product candidates under our Channel Agreement with Intrexon. These products, including DC-RTS-IL-12 and Ad-RTS-IL-12, are based on gene therapy technology. Due to the novelty of this medical technology, there can be no assurance that any development problems we experience in the future related to our synthetic biology platform will not cause significant delays or unanticipated costs, or that such development problems can be solved. We may also experience unanticipated problems or delays in expanding our manufacturing capacity or transferring our manufacturing process to commercial partners, which may prevent us from completing our clinical studies or commercializing our synthetic biology product candidates on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the FDA, the EMA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates. Currently, only one gene therapy product, UniQure s Glybera, which received marketing authorization from the EMA in 2012, has been approved in Europe but has not yet been launched for commercial sale, which makes it difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or Europe. Approvals by the EMA may not be indicative of what the FDA may require for approval.

Regulatory requirements governing gene and cell therapy products have changed frequently and may continue to change in the future. For example, the FDA has established the Office of Cellular, Tissue and Gene Therapies within its Center for Biologics Evaluation and Research, or CBER, to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Gene therapy clinical studies conducted at institutions that receive funding for recombinant DNA research from the U.S. National Institutes of Health, or the NIH, are also subject to review by the NIH Office of Biotechnology Activities Recombinant DNA Advisory Committee, or the RAC. Although the FDA decides whether individual gene therapy protocols may proceed, the RAC review process can impede the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation. Conversely, the FDA can put an IND on clinical hold even if the RAC

has provided a favorable review. Also, before a clinical trial can begin at an NIH-funded institution, that institution s institutional review board, or IRB, and its Institutional Biosafety Committee will have to review the proposed clinical trial to assess the safety of the trial. In addition, adverse developments in clinical trials of gene therapy products conducted by others may cause the FDA or other regulatory bodies to change the requirements for approval of any of our product candidates.

These regulatory review committees and advisory groups and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these treatment candidates or lead to significant post-approval limitations or restrictions. As we advance our synthetic biology product candidates, we will be required to consult with these regulatory and advisory groups, and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of our product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected for oncology product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue to maintain our business.

Because we are dependent upon clinical research institutions and other contractors for clinical testing and for research and development activities, the results of our clinical trials and such research activities are, to a certain extent, beyond our control.

Table of Contents

We materially rely upon independent investigators and collaborators, such as universities and medical institutions, to conduct our preclinical and clinical trials under agreements with us. These collaborators are not our employees and we cannot control the amount or timing of resources that they devote to our programs. These investigators may not assign as great a priority to our programs or pursue them as diligently as we would if we were undertaking such programs ourselves. If outside collaborators fail to devote sufficient time and resources to our drug development programs, or if their performance is substandard, the approval of our FDA applications, if any, and our introduction of new products, if any, will be delayed. These collaborators may also have relationships with other commercial entities, some of whom may compete with us. If our collaborators assist our competitors to our detriment, our competitive position would be harmed.

Table of Contents

**** Our reliance on third parties to formulate and manufacture our product candidates exposes us to a number of risks that may delay the development, regulatory approval and commercialization of our products or result in higher product costs.***

We do not have experience in drug formulation or manufacturing of drugs or biologics and do not intend to establish our own manufacturing facilities. Although we will work closely with and rely upon Intrexon on the manufacturing and scale-up of Intrexon product candidates, we lack the resources and expertise to formulate or manufacture our own product candidates. We currently are contracting for the manufacture of our product candidates. We intend to contract with one or more manufacturers to manufacture, supply, store, and distribute drug supplies for our clinical trials. If a product candidate we develop or acquire in the future receives FDA approval, we will rely on one or more third-party contractors or Intrexon to manufacture our products. Our anticipated future reliance on a limited number of third-party manufacturers exposes us to the following risks:

We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA must approve any replacement contractor. This approval would require new testing and compliance inspections. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of our products after receipt of FDA approval, if any.

Our third-party manufacturers might be unable to formulate and manufacture our products in the volume and of the quality required to meet our clinical needs and commercial needs, if any.

Our future contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store, and distribute our products.

Drug manufacturers are subject to ongoing periodic unannounced inspection by the FDA and corresponding state and foreign agencies to ensure strict compliance with current good manufacturing practices, or cGMP, and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers compliance with these regulations and standards.

If any third-party manufacturer makes improvements in the manufacturing process for our products, we may not own, or may have to share, the intellectual property rights to the innovation.

Our third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside the United States. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of drug candidates or products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or the commercialization of our product candidates or result in higher costs or deprive us of potential product revenues.

**** Any drug candidate for which we obtain marketing approval could be subject to post-marketing restrictions or withdrawal from the market and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our products, when and if any of them are approved.***

Any drug candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a drug candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including the requirement to implement a risk evaluation and mitigation strategy, or REMS, which could include requirements for a restricted distribution system. If any of our drug candidates receives marketing approval, the accompanying label may limit the approved use of our drug, which could limit sales of the product.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of our approved products. The FDA closely regulates the post-approval marketing and promotion of drugs to ensure drugs are marketed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers communications regarding off-label use and if we market our products outside of their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the FDCA relating to the promotion of prescription drugs may lead to investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

Table of Contents

litigation involving patients taking our drug;

restrictions on such products, manufacturers or manufacturing processes;

restrictions on the labeling or marketing of a product;

restrictions on product distribution or use;

requirements to conduct post-marketing studies or clinical trials;

warning letters;

withdrawal of the products from the market;

refusal to approve pending applications or supplements to approved applications that we submit;

recall of products;

fines, restitution or disgorgement of profits or revenues;

suspension or withdrawal of marketing approvals;

damage to relationships with existing and potential collaborators;

unfavorable press coverage and damage to our reputation;

refusal to permit the import or export of our products;

product seizure; or

injunctions or the imposition of civil or criminal penalties.

Noncompliance with similar European Union requirements regarding safety monitoring or pharmacovigilance can also result in significant financial penalties. Similarly, failure to comply with U.S. and foreign regulatory requirements

regarding the development of products for pediatric populations and the protection of personal health information can also lead to significant penalties and sanctions.

RISKS RELATED TO OUR ABILITY TO COMMERCIALIZE OUR PRODUCT CANDIDATES

**** If we are unable either to create sales, marketing and distribution capabilities or enter into agreements with third parties to perform these functions, we will be unable to commercialize our product candidates successfully.***

We currently have no marketing, sales, or distribution capabilities. If and when we become reasonably certain that we will be able to commercialize our current or future product candidates, we anticipate allocating resources to the marketing, sales and distribution of our proposed products in North America and in certain other countries; however, we cannot assure that we will be able to market, sell, and distribute our products successfully. Our future success also may depend, in part, on our ability to enter into and maintain collaborative relationships for such capabilities and to encourage the collaborator s strategic interest in the products under development, and such collaborator s ability to successfully market and sell any such products. Although we intend to pursue certain collaborative arrangements regarding the sale and marketing of certain of our product candidates, there are no assurances that we will be able to establish or maintain collaborative arrangements or, if we are able to do so, whether we would be able to conduct our own sales efforts. There can also be no assurance that we will be able to establish or maintain relationships with third-party collaborators or develop in-house sales and distribution capabilities. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful. In addition, there can also be no assurance that we will be able to market and sell our product candidates in the United States or overseas.

Table of Contents

If we are not able to partner with a third party and are not successful in recruiting sales and marketing personnel or in building a sales and marketing infrastructure, we will have difficulty commercializing our product candidates, which would harm our business. If we rely on pharmaceutical or biotechnology companies with established distribution systems to market our products, we will need to establish and maintain partnership arrangements, and we may not be able to enter into these arrangements on acceptable terms or at all. To the extent that we enter into co-promotion or other arrangements, any revenues we receive will depend upon the efforts of third parties that may not be successful and that will be only partially in our control.

**** If we cannot compete successfully for market share against other drug companies, we may not achieve sufficient product revenues and our business will suffer.***

The market for our product candidates is characterized by intense competition and rapid technological advances. If a product candidate receives FDA approval, it will compete with a number of existing and future drugs and therapies developed, manufactured and marketed by others. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products, or may offer comparable performance at a lower cost. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We will compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have products already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

Developing drugs and biopharmaceuticals;

Undertaking preclinical testing and human clinical trials;

Obtaining FDA and other regulatory approvals of drugs and biopharmaceuticals;

Formulating and manufacturing drugs and biopharmaceuticals; and

Launching, marketing, and selling drugs and biopharmaceuticals.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

If physicians and patients do not accept and use our product candidates, our ability to generate revenue from sales of our products will be materially impaired.

Even if the FDA approves our product candidates, physicians and patients may not accept and use them. Acceptance and use of our products will depend upon a number of factors including:

- Perceptions by members of the healthcare community, including physicians, about the safety and effectiveness of our drugs;
- Pharmacological benefit and cost-effectiveness of our products relative to competing products;
- Availability of coverage and adequate reimbursement for our products from government or other healthcare payors;
- Effectiveness of marketing and distribution efforts by us and our licensees and distributors, if any; and
- The price at which we sell our products.

Because we expect sales of our current product candidates, if approved, to generate substantially all of our product revenues for the foreseeable future, the failure of a drug to find market acceptance would harm our business and could require us to seek additional financing in order to fund the development of future product candidates.

Table of Contents

**** Our ability to generate product revenues will be diminished if our drugs do not obtain coverage or adequate reimbursement from payors.***

Our ability to commercialize our drugs, alone or with collaborators, will depend in part on the extent to which coverage and reimbursement will be available from government and health administration authorities, private health maintenance organizations and health insurers and other third-party payors.

Patients who are prescribed medicine for the treatment of their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their prescription drugs. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products when more established or lower cost therapeutic alternatives are already available or subsequently become available. Even if we obtain coverage for our product candidates, the resulting reimbursement payment rates might not be adequate or may require co-payments that patients find unacceptably high. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates.

In addition, the market for our product candidates for which we may receive regulatory approval will depend significantly on access to third-party payors drug formularies, or lists of medications for which third-party payors provide coverage and reimbursement. The industry competition to be included in such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug in their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available.

Third-party payors, whether foreign or domestic, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In addition, in the United States, no uniform policy of coverage and reimbursement for drug products exists among third-party payors. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that requires us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that approval will be obtained. If we are unable to obtain coverage of and adequate payment levels for our product candidates from third-party payors, physicians may limit how much or under what circumstances they will prescribe or administer them and patients may decline to purchase them. This in turn could affect our ability to successfully commercialize our products and impact our profitability, results of operations, financial condition, and future success.

In addition, in many foreign countries, particularly the countries of the European Union, the pricing of prescription drugs is subject to government control. In some non-U.S. jurisdictions, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the EU provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. We may face competition for our product candidates from lower-priced products in foreign countries that have placed price controls on pharmaceutical products. In addition, there may be importation of foreign products that compete with our own products, which could negatively impact our profitability.

**** Healthcare legislative reform measures may have a material adverse effect on our business and results of operations.***

In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory proposals in recent years that change the healthcare system in ways that could impact our future ability to sell our product candidates profitably. For example, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 established a new Part D prescription drug benefit, which became effective January 1, 2006. Under the prescription drug benefit, Medicare beneficiaries can obtain prescription drug coverage from private sector plans that are permitted to limit the number of prescription drugs that are covered in each therapeutic category and class on their formularies. If any of our product candidates that are approved by the FDA are not widely included on the formularies of these plans, our ability to market our products to the Medicare population could suffer.

Table of Contents

Furthermore, there have been and continue to be a number of initiatives at the federal and state level that seek to reduce healthcare costs. Most recently, in March 2010, President Obama signed into law the Patient Protection and Affordable Health Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the PPACA, which includes measures that significantly change the way healthcare is financed by both governmental and private insurers. Among the provisions of the PPACA of importance to the pharmaceutical industry are the following:

- an annual, nondeductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs, beginning in 2011;

- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program, retroactive to January 1, 2010, to 23% and 13% of the average manufacturer price for most branded and generic drugs, respectively;

- an extension of manufacturers Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations, effective March 23, 2010;

- new methodologies by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, and for drugs that are line extensions;

- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals beginning in April 2010 and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the Federal Poverty Level beginning in 2014, thereby potentially increasing both the volume of sales and manufacturers Medicaid rebate liability;

- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer s outpatient drugs to be covered under Medicare Part D, beginning in 2011;

- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program, effective in January 2010;

- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians, effective April 1, 2012;

expansion of healthcare fraud and abuse laws, including the False Claims Act and the Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;

a licensure framework for follow-on biologic products;

a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;

creation of the Independent Payment Advisory Board which, beginning in 2014, will have authority to recommend certain changes to the Medicare program that could result in reduced payments for prescription drugs and those recommendations could have the effect of law even if Congress does not act on the recommendations; and

establishment of a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending beginning by January 1, 2011.

Table of Contents

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. In August 2011, President Obama signed into law the Budget Control Act of 2011, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend proposals in spending reductions to Congress. The Joint Select Committee on Deficit Reduction did not achieve its targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, triggering the legislation s automatic reductions to several government programs. These reductions include aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect on April 1, 2013. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, further reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. The full impact of these new laws, as well as laws and other reform and cost containment measures that may be proposed and adopted in the future, remains uncertain, but may result in additional reductions in Medicare and other healthcare funding, which could have a material adverse effect on our future customers and accordingly, our ability to generate revenue, attain profitability, or commercialize our products.

**** If we fail to comply with federal and state healthcare laws, including fraud and abuse and health information privacy and security laws, we could face substantial penalties and our business, results of operations, financial condition and prospects could be adversely affected.***

As a pharmaceutical company, even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations pertaining to fraud and abuse and patients rights are and will be applicable to our business. We could be subject to healthcare fraud and abuse and patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include:

- the federal Anti-Kickback Statute, which constrains our marketing practices, educational programs, pricing policies, and relationships with healthcare providers or other entities, by prohibiting, among other things, soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, either the referral of an individual or the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;

- federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;

- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal criminal statutes that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and its implementing regulations, which imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information;

new requirements to report certain financial arrangements with physicians and teaching hospitals, as defined in the PPACA and its implementing regulations, including reporting any transfer of value made or distributed to teaching hospitals, prescribers, and other healthcare providers and reporting any ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations during the preceding calendar year, with data collection required as of August 1, 2013 and reporting to the Centers for Medicare & Medicaid Services, or CMS, to be required by March 31, 2014 and by the 90th day of each subsequent calendar year; and

state and foreign law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the industry s voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government that otherwise restricts certain payments that may be made to healthcare providers; state laws that require drug manufacturers to report information related to payments and other transfer of value to physicians and other healthcare providers; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Table of Contents

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws. In addition, recent health care reform legislation has further strengthened these laws. For example, the PPACA, among other things, amends the intent requirement of the federal anti-kickback and criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. Moreover, the PPACA provides that the government may assert that a claim including items or services resulting from a violation of the federal anti-kickback statute constitutes a false or fraudulent claim for purposes of the False Claims Act.

To the extent that any of our product candidates is ultimately sold in a foreign country, we may be subject to similar foreign laws and regulations. If we or our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from participation in United States federal or state health care programs, and the curtailment or restructuring of our operations. Any penalties, damages, fines, curtailment or restructuring of our operations could materially adversely affect our ability to operate our business and our financial results. Although compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, the risks cannot be entirely eliminated. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management s attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

**** Our ability to use net operating loss carryforwards to reduce future tax payments may be limited or restricted.***

We have generated significant net operating loss carryforwards, or NOLs, as a result of our incurrence of losses since inception. We generally are able to carry NOLs forward to reduce taxable income in future years. However, our ability to utilize the NOLs is subject to the rules of Section 382 of the Internal Revenue Code. Section 382 generally restricts the use of NOLs after an ownership change. An ownership change occurs if, among other things, the stockholders (or specified groups of stockholders) who own or have owned, directly or indirectly, 5% or more of a corporation s common stock or are otherwise treated as 5% stockholders under Section 382 and the United States Treasury Department regulations promulgated thereunder increase their aggregate percentage ownership of that corporation s stock by more than 50 percentage points over the lowest percentage of the stock owned by these stockholders over the applicable testing period. In the event of an ownership change, Section 382 imposes an annual limitation on the amount of taxable income a corporation may offset with NOL carry forwards. This annual limitation is generally equal to the product of the value of the corporation s stock on the date of the ownership change, multiplied by the long-term tax-exempt rate published monthly by the Internal Revenue Service. Any unused annual limitation may be carried over to later years until the applicable expiration date for the respective NOL carry forwards. We may have experienced an ownership change within the meaning of Section 382 in the past and there can be no assurance that we have not experienced additional ownership changes. As a result, our NOLs may be subject to limitations and we may be required to pay taxes earlier and in larger amounts than would be the case if our NOLs were freely usable.

**** Our synthetic biology product candidates may face competition in the future from follow-on biologics.***

With the enactment of the Biologics Price Competition and Innovation Act of 2009, or BPCIA, as part of the Patient Protection and Affordable Care Act, an abbreviated pathway for the approval of follow-on biological products was created. The new abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as interchangeable with an existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. The new law is complex and is only beginning to be interpreted and implemented by the FDA. As a result, its ultimate impact is subject to uncertainty, and could have a

material adverse effect on the future commercial prospects for our biological products.

Table of Contents

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

**** If we or our licensors fail to adequately protect or enforce our intellectual property rights or secure rights to patents of others, the value of our intellectual property rights would diminish and our ability to successfully commercialize our products may be impaired.***

Our success, competitive position, and future revenues will depend in part on our ability and the abilities of our licensors to obtain and maintain patent protection for our products, methods, processes and other technologies, to preserve our trade secrets, to prevent third parties from infringing on our proprietary rights, and to operate without infringing the proprietary rights of third parties.

To date, we have exclusive rights to certain United States and foreign intellectual property with respect to our small molecule product candidates and with respect to the Intrexon technology, including the existing Intrexon product candidates. Under our Channel Agreement with Intrexon, Intrexon has the sole right to conduct and control the filings, prosecution and maintenance of the patents and patent applications licensed to us. Although under the agreement Intrexon has agreed to consider in good faith and consult with us regarding any comments we may have regarding these patents and patent applications, we cannot guarantee that our comments will be solicited or followed. Without direct control of the channel program patents and patent applications, we are dependent on Intrexon to keep us advised of prosecution, particularly in foreign jurisdictions where prosecution information may not be publicly available. We anticipate that we and Intrexon will file additional patent applications both in the United States and in other countries. However, we cannot predict or guarantee:

- the degree and range of protection any patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- if and when patents will be issued;
- whether or not others will obtain patents claiming subject matter related to or relevant to our product candidates; or
- whether we will need to initiate litigation or administrative proceedings that may be costly whether we win or lose.

The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost, in a timely manner, or in all jurisdictions. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, in some circumstances, we do not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties. We may also require the cooperation of our licensors in order to enforce the licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the laws of foreign

countries may not protect our rights to the same extent as the laws of the United States and we may fail to seek or obtain patent protection in all major markets. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all.

Changes in patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection. In September 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law, resulting in a number of significant changes to United States patent law. These changes include provisions that affect the way patent applications will be prosecuted and may also affect patent litigation. In addition, the United States Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the value of patents, once obtained, and with regard to our ability to obtain patents in the future. As the United States Patent and Trademark Office continues to implement the Leahy-Smith Act, and as the federal courts have the opportunity to interpret the Leahy-Smith Act, the laws and regulations governing patents, and the rules regarding patent procurement could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

Certain technologies utilized in our research and development programs are already in the public domain. Moreover, a number of our competitors have developed technologies, filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and may cover or conflict with our owned or licensed patent applications, technologies or product candidates. Such conflicts could limit the scope of the patents that we may be able to obtain or may result in the rejection of claims in our patent applications. Because patent applications in the United States and many foreign jurisdictions are typically not published

Table of Contents

until eighteen months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, neither we nor our licensors can be certain that others have not filed or maintained patent applications for technology used by us or covered by our pending patent applications without our being aware of these applications. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned patents or pending patent applications, or that we were the first to file for patent protection of such inventions, nor can we know whether those from whom we license patents were the first to make the inventions claimed or were the first to file. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, our own earlier filed patents and applications or those of Intrexon may limit the scope of later patents we obtain or may result in the rejection of claims in our later filed patent applications. If third parties filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and that cover or conflict with our owned or licensed patent applications, technologies or product candidates, we may be required to challenge such protection, terminate or modify our programs impacted by such protection or obtain licenses from such third parties, which might not be available on acceptable terms, or at all.

Even if our owned and licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents by developing similar or alternative technologies or products in a non-infringing manner.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Given the amount of time required for the development, testing and regulatory review of new drug candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

**** If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.***

Our success also depends upon the skills, knowledge, and experience of our scientific and technical personnel, our consultants and advisors, as well as our licensors and contractors. To help protect our proprietary know-how and our inventions for which patents may be unobtainable or difficult to obtain, and to maintain our competitive position, we rely on trade secret protection and confidentiality agreements. To this end, it is our general policy to require our employees, consultants, advisors, and contractors to enter into agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries, and inventions important to our business. These agreements may not provide adequate protection for our trade secrets, know-how or other proprietary information in the event of any unauthorized use or disclosure or the lawful development by others of such information. Moreover, we may not be able to obtain adequate remedies for any breaches of these agreements. Our trade secrets may also be obtained by third parties by other means, such as breaches of our physical or computer security systems. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts

inside and outside the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. If any of our trade secrets, know-how or other proprietary information is disclosed, the value of our trade secrets, know-how and other proprietary rights would be significantly impaired and our business and competitive position would suffer.

**** Third-party claims of intellectual property infringement would require us to spend significant time and money and could prevent us from developing or commercializing our products.***

In order to protect or enforce patent rights, we, or Intrexon, may initiate patent infringement litigation against third parties. Similarly, we may be sued by others for patent infringement. We also may become subject to proceedings conducted in the United States Patent and Trademark Office, including interference proceedings to determine the priority or derivation of inventions, or post-grant review, inter partes review, or reexamination proceedings reviewing the patentability of our patented claims. In addition, any foreign patents that are granted may become subject to opposition, nullity, or revocation proceedings in foreign jurisdictions having such proceedings. The defense and prosecution, if necessary, of intellectual property actions are costly and divert technical and management personnel away from their normal responsibilities.

Our commercial success depends upon our ability, and the ability of our collaborators, to develop, manufacture, market and sell our drug candidates without infringing the proprietary rights of third parties. There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries. While no such litigation has been brought against us and we have not been held by any court to have infringed a third party s intellectual property rights, we cannot guarantee that our products or use of our products do not

Table of Contents

infringe third-party patents. It is also possible that we have failed to identify relevant third-party patents or applications. For example, applications filed before November 29, 2000 and certain applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing, which is referred to as the priority date. Therefore, patent applications covering our products or technology could have been filed by others without our knowledge. Additionally, pending patent applications which have been published can, subject to certain limitations, be later amended in a manner that could cover our products or the use of our products.

Our research, development and commercialization activities, as well as any product candidates or products resulting from these activities, may infringe or be claimed to infringe patents or patent applications under which we do not hold licenses or other rights. Patents do not protect its owner from a claim of infringement of another owner s patent. Therefore, our patent position cannot and does not provide any assurance that we are not infringing the patent rights of another.

The patent landscape in the field of synthetic biology, which we are pursuing under our Channel Agreement with Intrexon, is particularly complex. We are aware of numerous United States and foreign patents and pending patent applications of third parties that cover compositions, methods of use and methods of manufacture of synthetic biology, including biotherapeutics involving the *in vivo* expression of human IL-12. In addition, there may be patents and patent applications in the field of which we are not aware. The technology we license from Intrexon is early-stage technology and we are just beginning the process of designing and developing products using this technology. Although we will seek to avoid pursuing the development of products that may infringe any patent claims that we believe to be valid and enforceable, we may fail to do so. Moreover, given the breadth and number of claims in patents and pending patent applications in the field of synthetic biology and the complexities and uncertainties associated with them, third parties may allege that we are infringing upon patent claims even if we do not believe such claims to be valid and enforceable.

If a claim for patent infringement is asserted, there can be no assurance that the resolution of the claim would permit us to continue marketing the relevant product on commercially reasonable terms, if at all. We may not have sufficient resources to bring these actions to a successful conclusion. If we do not successfully defend any infringement actions to which we become a party or are unable to have infringed patents declared invalid or unenforceable, we may have to pay substantial monetary damages, which can be tripled if the infringement is deemed willful, or be required to discontinue or significantly delay commercialization and development of the affected products.

Any legal action against us or our collaborators claiming damages and seeking to enjoin developmental or marketing activities relating to affected products could, in addition to subjecting us to potential liability for damages, require us or our collaborators to obtain licenses to continue to develop, manufacture, or market the affected products. Such a license may not be available to us on commercially reasonable terms, if at all.

An adverse determination in a proceeding involving our owned or licensed intellectual property may allow entry of generic substitutes for our products.

Table of Contents

**** Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for noncompliance with these requirements.***

Periodic maintenance fees on any issued patent are due to be paid to the U.S. PTO and foreign patent agencies in several stages over the lifetime of the patent. The U.S. PTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

If we breach any of the agreements under which we license rights to products or technology from others, we could lose license rights that are material to our business or be subject to claims by our licensors.

We license rights to products and technology that are important to our business, and we expect to enter into additional licenses in the future. For instance, we have exclusively licensed patents and patent applications under our Channel Agreement with Intrexon. Under these agreements, we are subject to a range of commercialization and development, sublicensing, royalty, patent prosecution and maintenance, insurance and other obligations.

Any failure by us to comply with any of these obligations or any other breach by us of our license agreements could give the licensor the right to terminate the license in whole, terminate the exclusive nature of the license or bring a claim against us for damages. Any such termination or claim could have a material adverse effect on our financial condition, results of operations, liquidity or business. Even if we contest any such termination or claim and are ultimately successful, such dispute could lead to delays in the development or commercialization of potential products and result in time-consuming and expensive litigation or arbitration. On termination we may be required to license to the licensor any related intellectual property that we developed.

In addition, in certain cases, the rights licensed to us are rights of a third party licensed to our licensor. In such instances, if our licensors do not comply with their obligations under such licenses, our rights under our license agreements with our licensor may be adversely affected.

**** We may be subject to claims by third parties asserting that our employees or we have misappropriated their intellectual property, or claiming ownership of what we regard as our own intellectual property.***

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these employees or we have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee s former employer. Litigation may be necessary to defend against these claims.

In addition, while it is our policy to require our employees and contractors who may be involved in the development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who in fact develops intellectual property that we regard as our own. Our and their assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims

against third parties, or defend claims they may bring

against us, to determine the ownership of what we regard as our intellectual property.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in prosecuting or defending against such claims, litigation could result in substantial costs and be a distraction to management.

OTHER RISKS RELATED TO OUR COMPANY

**** Our stock price has been, and may continue to be, volatile.***

The market price of our common stock has been highly volatile. The stock market from time to time experiences significant price and volume fluctuations unrelated to the operating performance of particular companies. In addition, factors such as fluctuations in our operating results, future sales of our common stock, announcements of the timing and amount of product sales, announcements of the status of development of our products, announcements of technological innovations or new therapeutic products by us or our competitors, announcements regarding collaborative agreements, laboratory or clinical trial results, government regulation, FDA determinations on the approval of a product candidate NDA submission, developments in patent or other proprietary rights, public

Table of Contents

concern as to the safety of drugs developed by us or others, changes in reimbursement policies, comments made by securities analysts and general market conditions may have a substantial effect on the market price of our common stock.

We are subject to Sarbanes-Oxley and the reporting requirements of federal securities laws, which can be expensive.

As a public reporting company, we are subject to the Sarbanes-Oxley Act of 2002, as well as to the information and reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and other federal securities laws. As a result, we incur significant legal, accounting, and other expenses that we would not incur as a private company, including costs associated with our public company reporting requirements and corporate governance requirements. As an example of public reporting company requirements, we evaluate the effectiveness of disclosure controls and procedures and of our internal control over financing reporting in order to allow management to report on such controls. Sarbanes-Oxley generally requires that a public reporting company s independent registered public accounting firm attest to the effectiveness of the company s internal control over financial reporting as of the end of each fiscal year in the company s annual report on Form 10-K. In addition, any updates to our finance and accounting systems, procedures and controls, which may be required as a result of our ongoing analysis of internal controls, or results of testing by our independent auditor, may require significant time and expense. As a company with limited accounting resources, a significant amount of management s time and attention has been and will continue to be diverted from our business to ensure compliance with these regulatory requirements. This diversion of management s time and attention may have a material adverse effect on our business, financial condition and results of operations.

Table of Contents

Management is working to continuously monitor and improve internal controls and has set in place controls to mitigate the potential segregation of duties risk. In the event significant deficiencies or material weaknesses are identified in our internal control over financial reporting that we cannot remediate in a timely manner, or if we are unable to receive a positive attestation from our independent registered public accounting firm with respect to our internal controls over financial reporting, investors and others may lose confidence in the reliability of our financial statements and the trading price of our common stock and ability to obtain any necessary equity or debt financing could suffer. In addition, in the event that our independent registered public accounting firm is unable to rely on our internal controls over financial reporting in connection with its audit of our financial statements, and in the further event that it is unable to devise alternative procedures in order to satisfy itself as to the material accuracy of our financial statements and related disclosures, we may be unable to file our periodic reports with the United States Securities and Exchange Commission (SEC). This would likely have an adverse effect on the trading price of our common stock and our ability to secure any necessary additional equity or debt financing, and could result in the delisting of our common stock from the NASDAQ Capital Market, which would severely limit the liquidity of our common stock.

Anti-takeover provisions in our charter documents and under Delaware law may make an acquisition of us, which may be beneficial to our stockholders, more difficult.

Provisions of our amended and restated certificate of incorporation and bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, even if doing so would benefit our stockholders. These provisions authorize the issuance of blank check preferred stock that could be issued by our board of directors to increase the number of outstanding shares and hinder a takeover attempt, and limit who may call a special meeting of stockholders. In addition, Section 203 of the Delaware General Corporation Law generally prohibits a publicly-held Delaware corporation from engaging in a business combination with a party that owns at least 15% of its common stock unless the business combination is approved by the company s board of directors before the person acquires the 15% ownership stake or later by its board of directors and two-thirds of its stockholders. In connection with our January 2011 issuance of shares of common stock to Intrexon in a private placement transaction, our board of directors waived the Section 203 prohibition with respect to a future business combination with Intrexon. However, the Stock Purchase Agreement governing such issuance contains a standstill provision that generally prohibits Intrexon from seeking, initiating, offering or proposing to effect such a transaction prior to January 6, 2014 without our inviting them to do so. Section 203 and this standstill provision could have the effect of delaying, deferring or preventing a change in control that our stockholders might consider to be in their best interests.

Because we do not expect to pay dividends, you will not realize any income from an investment in our common stock unless and until you sell your shares at profit.

We have never paid dividends on our capital stock and we do not anticipate that we will pay any dividends for the foreseeable future. Accordingly, any return on an investment in us will be realized, if at all, only when you sell shares of our common stock.

Table of Contents

Item 2. Unregistered Sale of Equity Securities and Use of Proceeds

Issuer Purchases of Equity Securities

During the nine months ended September 30, 2013, we purchased 60,041 shares of common stock in settlement of employee tax withholding obligations due upon the vesting of restricted stock. The following table provides information about these purchases of restricted shares for the nine months ended September 30, 2013:

Period	Total Number of Shares Purchased	Average Price Paid Per Share ($)
January 1 to 31, 2013	52,018	$ 4.28
February 1 to 28, 2013		$
March 1 to 31, 2013	5,400	$ 4.50
April 1 to 30, 2013		$
May 1 to 31, 2013	2,623	$ 1.65
June 1 to 30, 2013		$
July 1 to 31, 2013		$
August 1 to 31, 2013		$
September 1 to 30, 2013		$
Total	60,041	

Item 3. Defaults upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Not applicable.

Item 6. Exhibits

The exhibits listed in the Exhibit Index immediately preceding such exhibits are filed as part of this report and such Exhibit Index is incorporated herein by reference.

Table of Contents

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

/s/ Jonathan Lewis
Jonathan Lewis, M.D., Ph.D.

Chief Executive Officer
(Principal Executive Officer)

Dated: October 22, 2013

/s/ Kevin G. Lafond
Kevin G. Lafond

Vice President, Chief Accounting Officer and Treasurer
(Principal Financial and Accounting Officer)
Dated: October 22, 2013

Table of Contents

EXHIBIT INDEX

31.1*	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certifications pursuant to 18 U.S.C. Section 1350
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.